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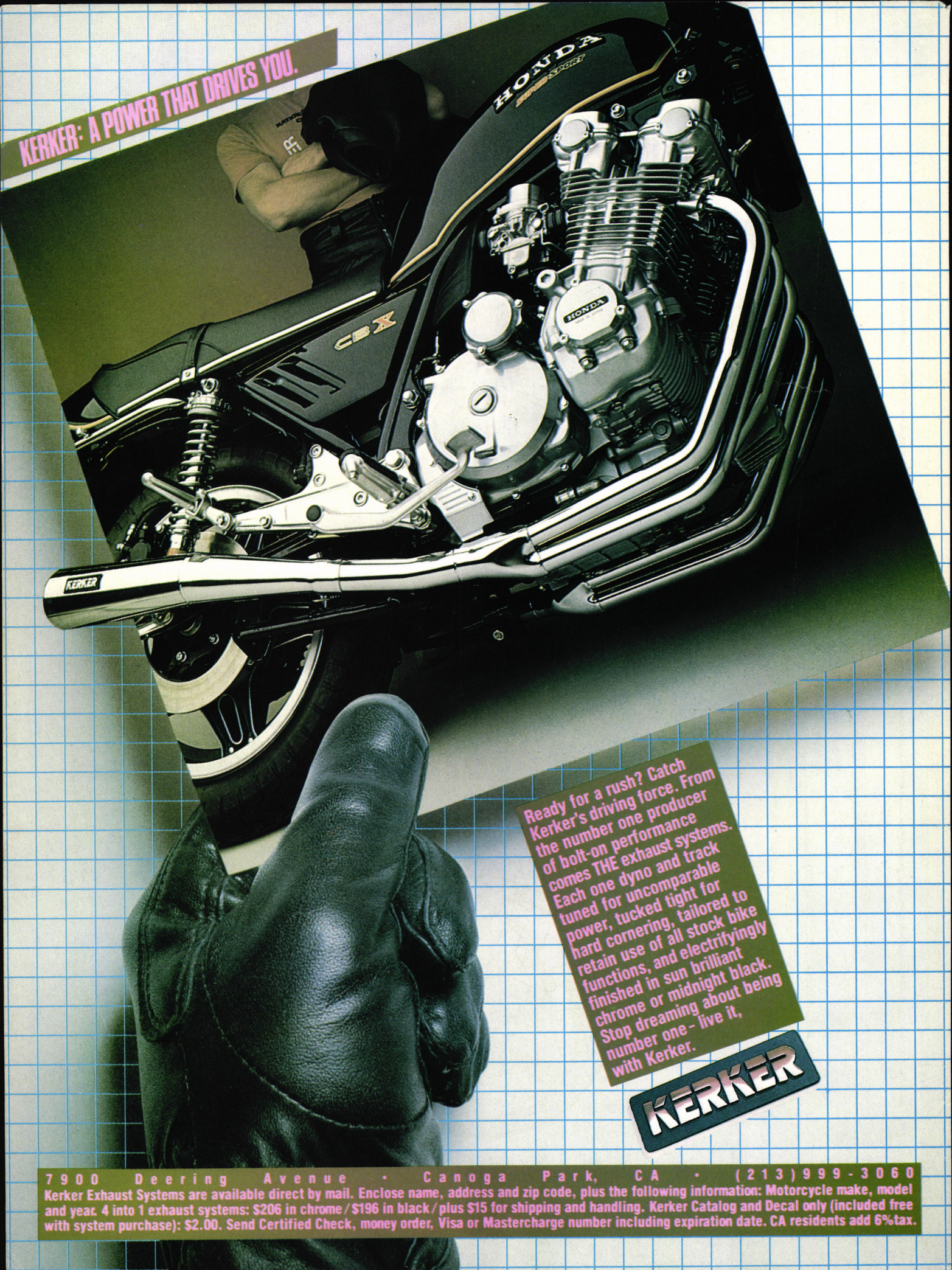


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CYCLE GUIDE

QUOTE:

"Think of turbocharging as artificial respiration for engines suffocating in mechanical complexity."

—Pg 29

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Super Sport sideways for his radical
Koni-Omega

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CYCLE GUIDE'S CYCLE GUIDE

OFF-ROAD

MAKE & MODEL	ISSUE	ENGINE TYPE	WHEEL TRAVEL, IN. FRONT/REAR	WEIGHT, LBS	HORSEPOWER@RPM*	GEARS
Can-Am 250 MX-5	Jan. '79	Two-str.	10.8/10.0	218	32.1	8500 5
Can-Am 250 Qualifier III	Feb. '80	Two-str.	9.7/9.8	230	25.2	8000 6
Can-Am 400 MX-6	June '80	Two-str.	11.5/10.8	233	38.3	6500 5
Honda CR125R	Jan. '80	Two-str.	11.5/10.8	202	20.8	10500 6
Honda CR250R	May '80	Two-str.	11.8/11.0	222	27.5	7000 5
Honda XL185	March '79	Four-str.	7.4/6.7	239	11.2	7500 5
Honda XL250S	Oct. '78	Four-str.	7.8/7.7	262	14.8	8000 5
Honda XR185	March '79	Four-str.	8.0/7.75	221	12.8	10000 6
Honda XR500	May '79	Four-str.	8.5/8.6	273	25.8	6500 5
Husqvarna 125CR-80	Nov. '79	Two-str.	11.8/11.8	214	18.8	11000 6
Husqvarna 250CR	Dec. '78	Two-str.	11.8/11.8	227	24.3	8500 6
Husqvarna 250WR	Aug. '79	Two-str.	9.5/9.5	238	21.9	6500 6
Kawasaki KLX250	Sept. '79	Four-str.	9.8/10.5	239	15.2	8500 5
Kawasaki KX125 A5	Oct. '79	Two-str.	9.8/10.0	194	20.0	11000 6
Kawasaki KX250	Sept. '80	Two-str.	11.3/11.2	233	26.8	8000 5
Kawasaki KX420	July '80	Two-str.	11.0/11.3	250	34.0	7000 5
Maico 400 MI	April '80	Two-str.	12.3/12.0	233	35.5	7000 5
Maico 450 MI	April '80	Two-str.	12.3/12.0	236	37.0	7000 5
Montesa Cappa 414 VE	Oct. '79	Two-str.	10.9/10.7	236	28.5	6500 4
Suzuki PE175	Aug. '78	Two-str.	8.8/9.4	216	11.2	9000 6
Suzuki RM125T	Dec. '79	Two-str.	11.2/11.7	200	19.8	10500 6
Suzuki RM250N	May '79	Two-str.	11.2/11.8	218	27.1	8000 5
Suzuki RM400N	Sept. '79	Two-str.	11.2/11.8	229	28.1	7500 5
SWM 175 ISDT	Aug. '78	Two-str.	10.0/10.0	220	17.3	9500 6
SWM 250 MX	Nov. '78	Two-str.	10.0/10.0	216	29.5	9000 5
Yamaha Pro-Tec 600	Nov. '79	Four-str.	10.5/10.1	262	46.2	6500 5
Yamaha IT250G	Dec. '79	Two-str.	9.8/9.8	244	27.7	8000 6
Yamaha TT250G	Aug. '80	Four-str.	8.8/7.5	242	17.7	8000 5
Yamaha YZ250G	March '80	Two-str.	11.2/11.6	217	29.6	8000 6
Yamaha YZ465G	July '80	Two-str.	11.2/11.8	228	39.4	7000 5

* Horsepower shown is taken at the rear wheel and does not account for transmission losses between the engine and rear wheel. These results may differ from manufacturer's claims or from results obtained using a different dynamometer.

STREET

MAKE & MODEL	ISSUE	ENGINE TYPE*	QUARTER-MILE SEC./MPH	TOP SPEED, MPH	WEIGHT, LBS	FUEL CONSUMPTION, MPG	STOPPING DISTANCE FROM 60 MPH, FT.
BMW R80/7	Oct. '78	2C/G	13.47/97.9	104	442	38-46	138
BMW R100T (Dressed)	Aug. '79	2C/G	13.81/92.9	119	521	38-53	142
Ducati Darmah	Sept. '78	90-deg. 2D/F	13.41/97.5	118	487	25-40	120
Dunstall-Suzuki GS1000 CS	July '79	4A/F	11.32/117.0	154	488	37-5	124
H-D CLE Sidecar	Sept. '79	45-deg. 2D/F	17.60/69.3	91	1036	25-35	181
H-D Tour Glide	Sept. '80	45-deg. 2D/F	15.58/83.9	108	785	35-44	223
Honda CB400T Hawk	March '80	2A/F	14.37/88.6	100	391	51-65	139
Honda CX500 Custom	Aug. '79	80-deg. 2E/G	14.12/92.9	102	468	44-51	146
Honda CB650	Feb. '79	4A/F	13.29/99.9	113	447	37-51	131
Honda CB650 Custom	Dec. '79	4A/F	13.10/99.8	113	447	44-52	131
Honda CB750F	Oct. '79	4A/F	12.41/106.8	128	524	31-52	135
Honda CB750K	Nov. '79	4A/F	12.77/105.8	124	525	38-52	130
Honda CB900C	June '80	4A/G	12.44/107.9	132	588	37-44	155
Honda Interstate	March '80	4C/G	13.40/96.0	121	718	33-45	146
Honda CBX	Dec. '79	6A/F	11.86/114.5	130	555	19-36	145
Kawasaki KZ550	Sept. '80	4A/F	13.45/97.1	103	426	37-51	150
Kawasaki KZ650 Custom	May '79	4A/F	13.16/100.2	116	483	45-49	125
Kawasaki KZ750	May '80	4A/F	12.50/107.8	127	471	39-50	134
Kawasaki KZ1000	Aug. '80	4A/F	12.12/111.1	130	548	37-45	131
Kawasaki KZ1000 Shaft	Aug. '80	4A/G	12.19/112.2	132	582	32-44	129
Kawasaki Z1-R	April '80	4A/F	12.24/110.6	130	552	35-48	131
Kawasaki KZ1300A GT	Sept. '80	6A/G	12.71/107.4	135	730	31-45	146
Laverda 1200 Jota	Dec. '78	3A/F	12.54/105.0	121	518	29-37	145
Suzuki GS450 ST	May '80	2A/F	14.09/92.5	100	397	55-57	127
Suzuki GS750ET	July '80	4A/F	12.62/105.5	122	523	39-55	130
Suzuki GS850N	March '79	4A/G	12.81/104.0	116	566	35-45	153
Suzuki GS1000E	Aug. '80	4A/F	11.98/113.9	136	528	32-50	137
Suzuki GS1000G	Aug. '80	4A/G	12.34/110.8	139	564	30-51	141
Suzuki GS1100ET	April '80	4A/F	11.43/118.3	140	544	37-49	116
Triumph Bonneville	Dec. '78	2A/F	13.41/96.2	110	414	42-49	NA
Triumph Bonneville Special	July '79	2A/F	13.94/96.2	110	411	45-55	175
Yamaha RD400F	June '79	Two-str. 2A/F	14.16/90.2	98	355	30-43	129
Yamaha SR500E	April '78	1B/F	14.98/84.2	92	364	49-58	132
Yamaha XJ650 Maxim I	June '80	4A/G	12.60/107.4	120	453	40-54	128
Yamaha TZ750E	April '79	Two-str. 4A/F	11.62/125.5	180	331	NA	NA
Yamaha XS850LG	Feb. '80	3A/G	13.10/101.7	116	548	42-55	144
Yamaha XS1100SG	Jan. '80	4A/G	11.94/112.6	135	572	42-47	129

* A-Transverse Vertical, B-Vertical, (single-cylinder only), C-Horizontally Opposed, D-Tandem Vee, E-Transverse Vee, /F-Chain Final Drive, /G-Shaft Final Drive, /H-Belt Final Drive

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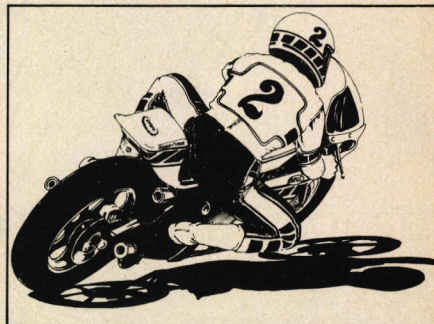
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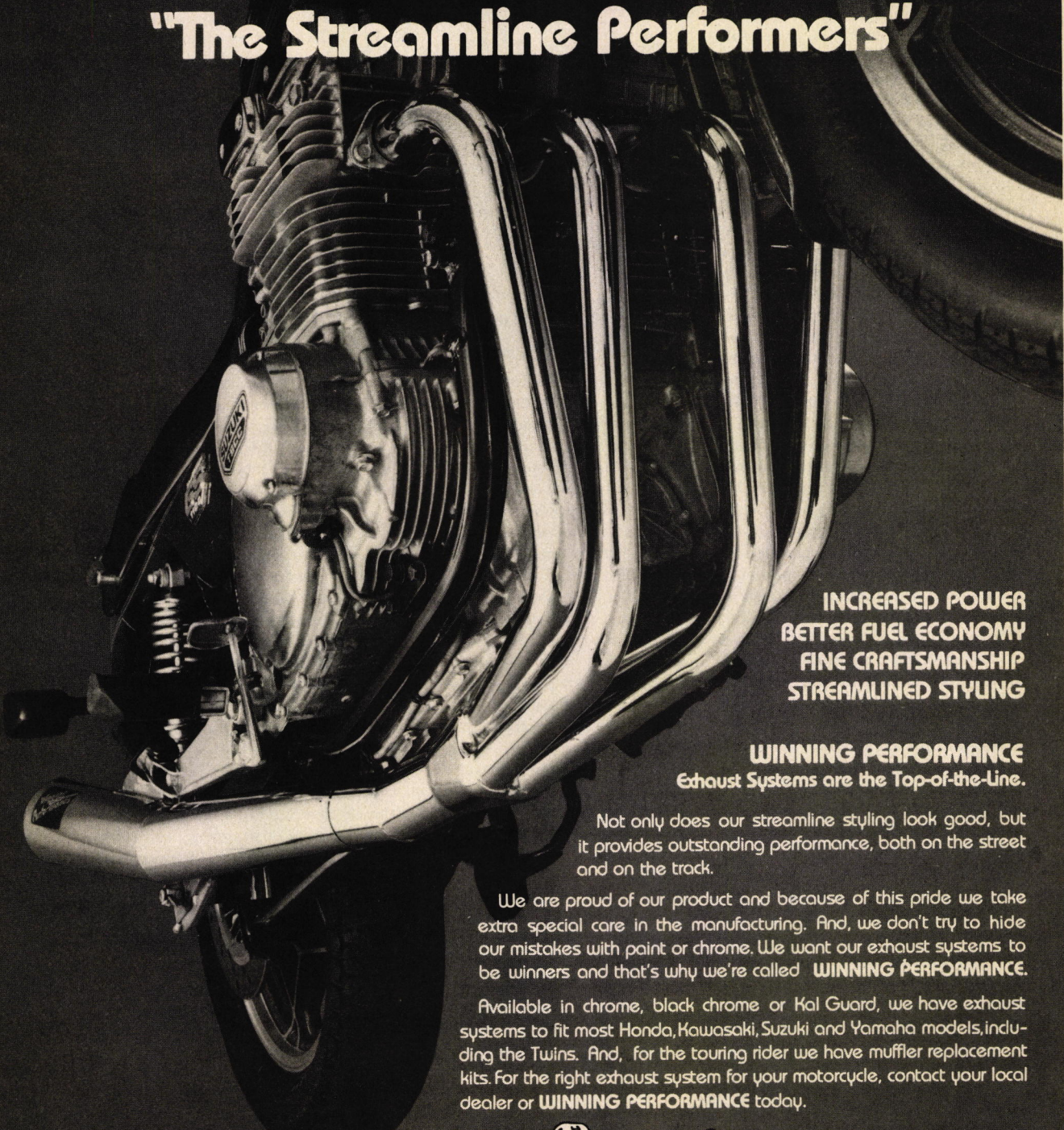
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PERFORMANCE PRODUCTS

Editorial

Defending The Faith

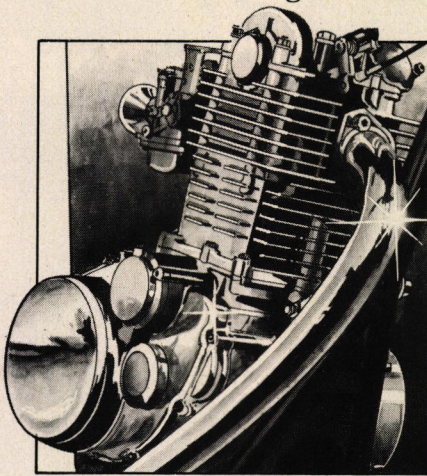
The time to draw the battle lines between great and good is now.

• All right, you connoisseurs and aficionados of fine motorcycles, close ranks and stand fast. Another assault on the True Faith has begun. Some people claim that motorcycle design is finished. They say it has climbed to such lofty technological heights that further progress is unnecessary. They say we ought to settle for what we've got. That means it is time to take to the barricades. From this moment forward, we will have to defend ourselves whenever we claim to be able to distinguish a good motorcycle from one that is less good. The simple refrain, "It's bitchin', man," no longer suffices. We must explain ourselves.

In some ways, you can't blame the reactionaries. It is difficult to find truly awful motorcycles these days. You don't tumble across badass bikes like the Suzuki TM400 Cyclone anymore, bikes that'll spit you into a berm if the engine reaches critical mass at an inopportune moment. Nary a Kawasaki H1R-replica, built with a hinge in the frame just aft of the steering head, can be found hanging about on guardrails. And the \$5-alarm-clock durability of bikes like the OSSA Phantom III is no longer an issue.

It's no wonder a substantial number of two-wheel pilgrims believe we've reached the Promised Land. You can't find a motorcycle design that's congenitally crippled, that violates the code of bike behavior. Sure, cam chains grow floppy, Woodruff keys come adrift and valves bump into pistons—but evil engineering? Never. So who can blame those who say the final flowering of motorcycle engineering is at hand? To them, further progress might inadvertently violate the last vestige of the motorcycle's mechanical soul. It's perfectly understandable that your neighborhood reactionary looks upon complaints about hard seats, confusing switches and wobbles on the far side of 90 mph as the carping of hypercritical agitators who never will be satisfied.

Indeed, taking a broad view of the motorcycle hardware on parade this year, nearly every example can earn your admiration once you lower your standards a little. And yet, you and I still can tell the difference between a great motorcycle and a good one. Even though I'm predisposed to like everything on two wheels, a nagging sense of disappointment plagues me when I have to settle for less than greatness. I can tell when I'm in the saddle of a truly memorable bike. The pupils of my eyes shrink like those of a speed freak's, and my pulse hammers



harder in my right wrist. Something extraordinary is at hand, and the alarm claxons have been sounded throughout my nervous system, clearing the decks for action. The problem lies in convincing the uninitiated that such emotions are more than figments of an overactive imagination.

Whenever I attempt to explain the difference between greatness and goodness to the backsliders, I cite the YZ250G and GS 1000E. As expressions of the latest design trends, they reveal what can be accomplished in concept, design and performance. And so they are the standards by which others are judged. These bikes certainly are not without flaws, however. Early YZs experienced gearbox failures, while Suzuki still hasn't licked its problem with valve-cover gaskets. Yet even with these faults, a single ride convinces you that something out of the ordinary lives within the hardware.

The chore that all of us face is the description of this intangible element that transforms a motorcycle. And it's more than just a resemblance to a mentalized image of The One True Motorcycle—greatness comes in all shapes and sizes, from IT125 to CB750F. Unadorned high performance doesn't tell the tale, either—greatness is more than block-long wheelies or 11-second quarter-miles.

I usually pin my defense of a bike's merit to the boldness with which it attacks its design goal and the adroitness with which it marshals its hardware to do it. That means I begin evaluating a motorcycle by coming to terms with the bike on its own ground. Thousands of variables must be arranged before a motorcycle can be built, and to understand the final product the concept that shaped the designer's priorities must be

grasped. It makes no sense to evaluate a CR125R as an enduro bike, just as a Harley-Davidson can't be pressed into the road-racer mold.

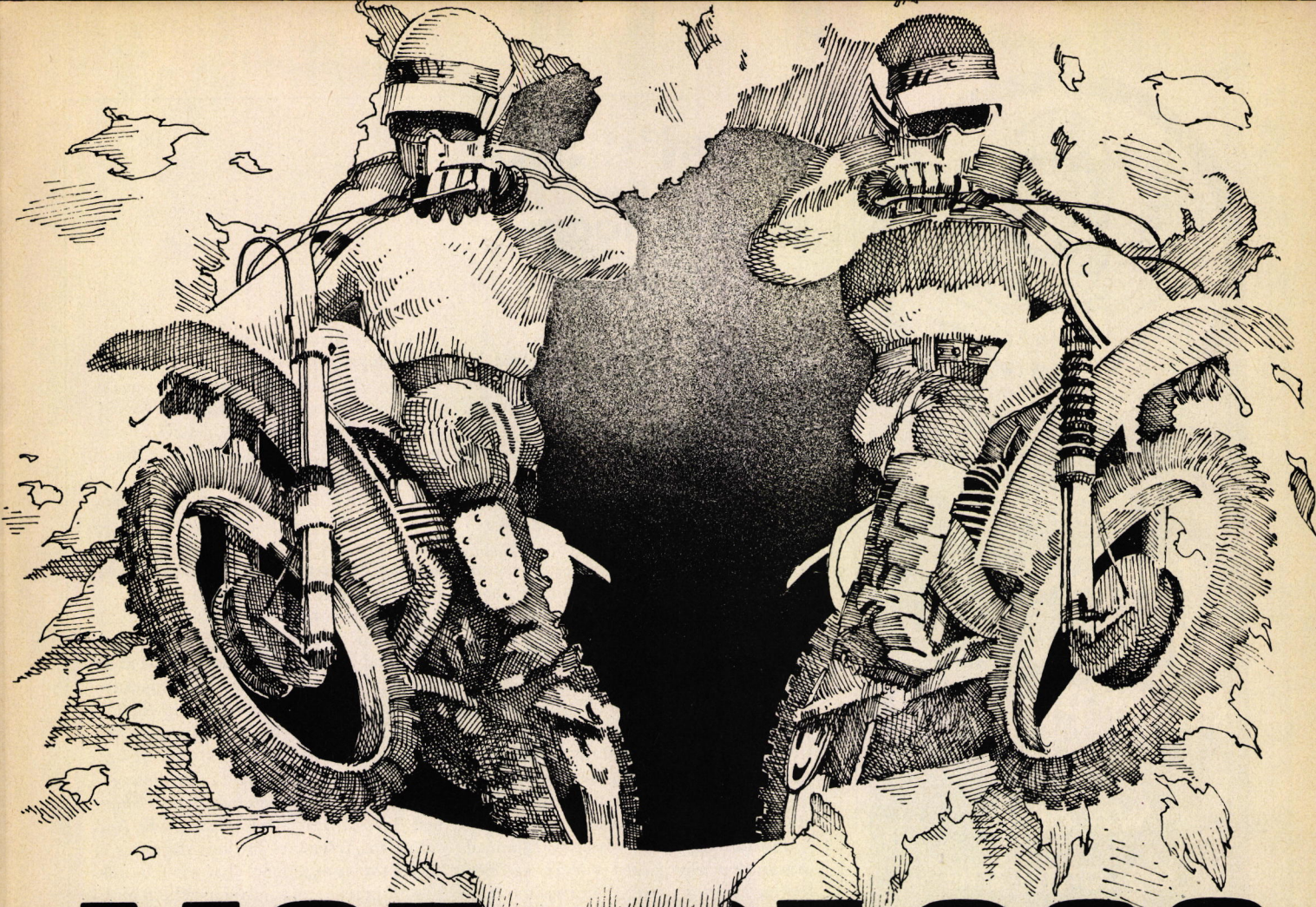
Once I've got a motorcycle targeted, it succeeds or fails for me according to how well the design elements work with one another. In nearly all great bikes, the variables work toward a single end. The pieces are fused into a single entity with the same precision as a celestial clock. There are no gaps between the components—indeed, the gap between man and motorcycle nearly has been erased. Conventional notions of balance and proportion probably describe what is at stake here, but the word "integration" says it all. It describes a motorcycle built from the ground up—instead of derived from existing hardware. Such a bike synthesizes design trends, using them to break out of the territory circumscribed by ordinary motorcycles. You can detect a single consciousness at work in these motorcycles. In comparison, other bikes suffer from a fatal failure of nerve, too timid to make a statement and follow through with it.

Historically, bikes built with boldness have shaped the future for the rest. Bikes content with acceptable standards of design have fallen by the wayside—witness the Triumph Bonneville. Periodically, a few pilgrims will argue that bikes have become too fast, too heavy or too radical; yet the evolution of motorcycle design continues because riders choose bikes that arrange design elements into new shapes capable of quickening the pulse anew. To be content with less than the best—either in comfort, winning ability or emergency capability—is to betray the spirit that began our pilgrimage toward better motorcycles in the first place. Because riders really *can* tell the difference between a great motorcycle and a good one. And each new bike is a further step along the path to the Promised Land of two-wheeled kinesthetics.

That's why I'm convinced it's more important than ever for all of us to maintain our interest in outstanding motorcycles. Apologists for motorcycle design miss the point when they claim the separation of outstanding motorcycles into a discrete category implies other bikes are unrewarding.

It's like wine. Even if reactionaries claim a steady diet of Red Mountain won't prove harmful to my health, I still prefer a fine vintage occasionally just to remind me why I bother with wine in the first place.

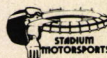
—Michael Jordan



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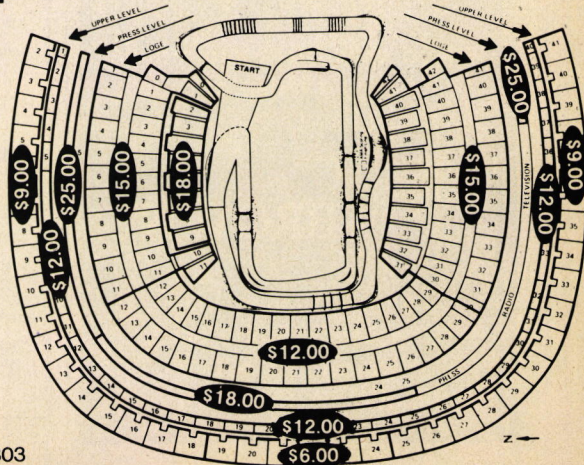
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West's Side

Boonie Toons

Turning a deaf ear to the music of the fears

• Since half an hour after sunrise we'd been riding up the forehead of the world, and the Colorado Rockies, insidious damn things, just kept getting more and more beautiful. By the time we rode into Silverton at one p.m., wall-eyed and brain-fried from the morning's scenery, the distinction between exhilaration and exhaustion had flat disappeared. They say you can have too much of a good thing and we'd just proved it.

We switched off, the white, high-mountain sun shrieking down on us from about 20 feet overhead, and noticed instantly that a thin film had accumulated on our tongues, a potentially dangerous layer of road-grit that from prior experience we knew was soluble only in ice-cold Coors. Through blood-shot eyes we looked up and down the main street of Silverton for that familiar five-lettered red-and-white sign, the beacon of first aid. It was in this staring and doubtful state of sanity that I first saw the guy.

It wasn't the way he was sitting, slumped over in that jelly-backed posture seasoned touring riders get after their third orbit of the earth. And it wasn't his bike, an ancient Gold Wing that had clearly been on tour since the invention of mud. It wasn't even the hulking bathtub fairing on the bike, although that came nearer the problem.

No, what burned me up was the object I saw mounted on the fairing's "dashboard." The guy had made a hole in the dull-black surface ("finished in the rich, natural look of simulated creosote," the sales brochure read) and it was obvious he had used a good axe for the job. There beneath a jumble of exposed wires, connectors and fuse-unions that looked like a serving of alfalfa sprouts, lurked the fascia of a gawdamn radio!

Decadent middle-class swine.

Now before we go any further, you have to know three things. First, all this happened a few years ago when the notion of bike-mounted radios was new. Second, I was on my very first tour and taking things seriously. And third, I'm a stuffed-shirt.

Add to these the fact that I was "into" all the "rilly relevant" sap-think of the times... like, that we were here to "get tight with the earth." Like that we were riding bikes not just because we liked them, but because cars pollute and are materialistic. Like that we'd come here to get away from people—all sixteen of us!

As I said, sap-think. But even that wasn't sappy enough. If there'd been such a thing as a solar-powered motorcycle back then, I'm sure I would have owned one.

But, to someone like me who'd worked so hard on getting his consciousness raised, the idea of a fairing-mounted radio was the original sociological tank-slapper. My Sierra Club Karma-Meter went straight over to "Elite-Alert." I mean, Jeeze Crice, didn't this guy realize how *uncool* it was!

A couple of guys from our group went over and talked to him, but I knew better—the guy was a heathen. It wasn't until a soyaburger and two Coors later that I broke down and asked if, er, the radio worked...

Well, a little while ago CYCLE GUIDE did a tour-test of the latest Honda GL1100 Interstate, and if you read it, you know what an uncompromising, superb touring package the bike really is. Mechanically, it's bullet-proof. Ergonomically, it's a balm to the soul. House-movingly, it's got enough locker space to transport a cubic lifetime's worth of organic vegetables, Earth Shoes and Boycott Grapes bumper-stickers. And riding the Interstate for long distances is such a serene experience that you'll be able to get from ashram to ashram without missing one single bulletin from Krishna-Central. They ought to call it the GL1100 "T.M." I can see the ads now: "Get There Fast—Get There Holy!"

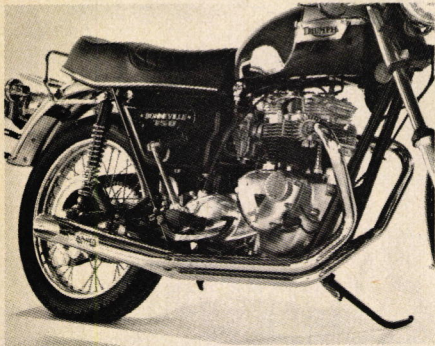
Of course, there's one item on the Interstate that, temporarily at least, stuck in my craw. Over on the lefthand side of the dashboard is a digital, push-button, automatic-memory AM/FM radio. The minute I saw it, memories of that poor lost soul in Silverton came storming back to me.

But Steve Thompson, standing over my shoulder, said go ahead, push the button. Okay, I thought, nobody but Thomps will see. I pushed. That radio was the *berries*!

And all at once I saw it. If it hadn't been for guys slumped over their saddles in places like Silverton, Colorado listening to radios, a magnificent touring weapon like the Interstate never would have come into existence. Sure, some guy from Osaka did the design drawings—and managed to leave off the axe-gash and the side-order of alfalfa sprouts—but it took a genuine American heathen to realize it was okay to be comfortable on tour. And now even a stuffed-shirt like me can dig it.

Of course, I've learned a lot in these past few years, completely ridded myself of that old trendy sap-think. Now then, if they could just make it a little easier to find Perrier, designer jogging outfits and racketball courts when I'm touring on my GL1100 in West Texas, well... —Ted West

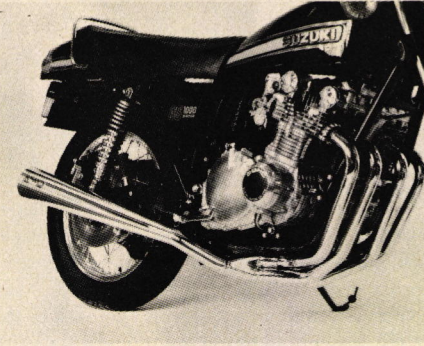
PRO-formance lineup for the 80's



TRIUMPH
10-1607

2 into 1

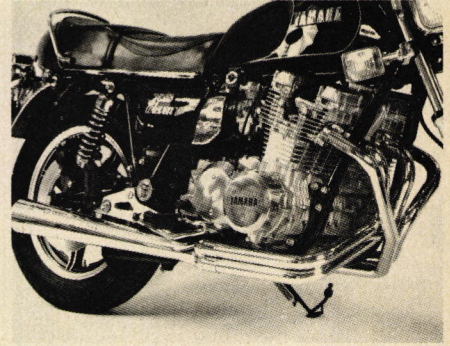
\$135⁹⁵



SUZUKI
10-1180

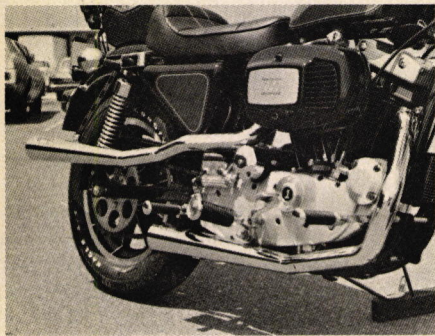
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\$202⁹⁵



YAMAHA
10-1412

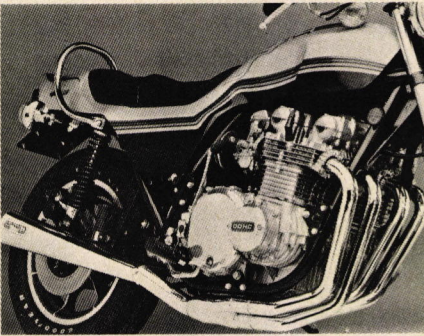
4 into 2 (cross-over) **\$246⁵⁰**



HARLEY
10-1060

"twice pipes"

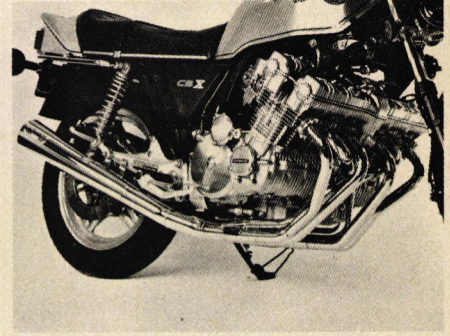
\$116⁹⁵



KAWASAKI
10-1517

4 into 1

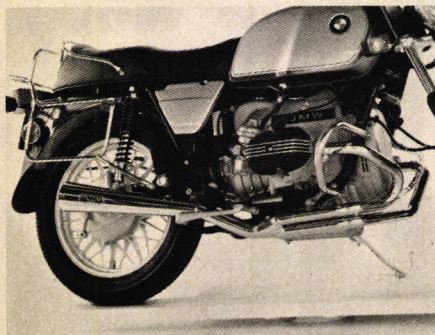
\$202⁹⁵



HONDA
10-1295

6 into 1

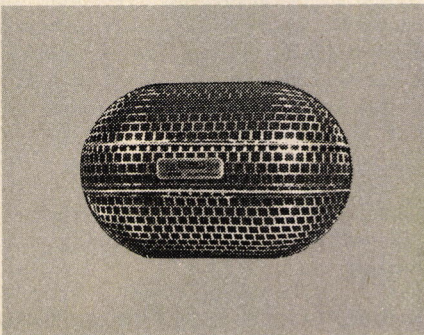
\$290⁵⁰



BMW
10-1836

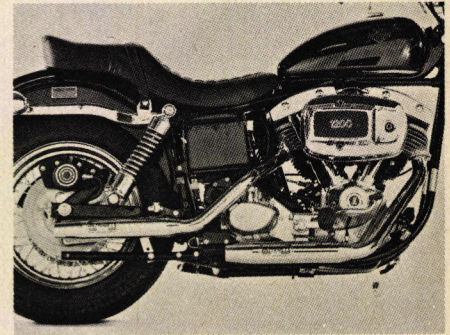
2 into 1

\$149⁹⁵



RAM-FLO Air Filters

\$27⁵⁰ each



HARLEY
10-1018

Staggard Tapered Duals
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Letters

Desperate measures, Controversial controls, View from the ivory tower

IVORY TOWER PUNKISM

Steve Thompson's "Confronting The Punks" got it all a little wrong. It's not a case of the Bigwigs not knowing about the Punks. The Bigwigs are the Punks.

One example: After the only Honda dealer within 1500 miles screwed up a three-week-old perfectly good bike during a \$55 warranty inspection, I wrote to the Honda head office. I told them why I won't go back to the local dealer, and asked them to send me (for an enclosed check) a shop manual and the parts necessary to put the bike into the shape it was in before the warranty inspection.

Guess what their reply was? "Go see the nearest Honda dealer. We don't deal with the public." They didn't even bother to include a sheet of dealers' addresses. With Punks like that in the ivory towers, what do you expect? Now I buy my bikes and parts over the phone from a chainsaw dealer 1500 miles farther south, who sells bikes as a sideline. I've never seen the store, but I like the service.

Helmut Morscher

Whitehorse, Yukon, Canada

DESPERATE TIMES CALL

Hey, I have come up with a solution. If you, like me, have finally realized that you hate, detest and loathe the Car People (this naturally excludes the Motorcycle People and Car People who don't know that they are Motorcycle People because they just haven't given it a chance), you probably have pondered the Central Question: Why will Car People look right at you and then proceed to run you off the road? And why do they change lanes into you, sweetly smiling and listening to "beautiful music all the time" on their stereos?

I spent a good, solid hour thinking about this one day, while lying in a ditch with my bent-up motorcycle on top of me. Further studying the problem, I now realize that the Car People are much more intent on the destruction of motorcycles in the downtown area than they are in the suburban zones. And God help the secretary who comes in to work swinging a helmet by its strap (suffice it to say that another secretary told me that carrying a helmet was "unclassy" and would hurt our firm's image). You can see that my hate of Car People is not some snap thing; it's been a long time coming. And I think I've come up with a solution.

I think we motorcyclists should take thousands of issues of CYCLE GUIDE, rent a helicopter and drop them all over downtown areas of major cities, taking careful aim for the cars containing the Drivers-Who-Never-Turn-Their-Heads, thus forcing them to

look at the pictures much in the fashion of "Clockwork Orange," and causing them to realize that we are here and we intend to stay, whether they like it or not. It may cause some of them to be unable to eat their lunches for several weeks, but I think it will work. If not, we resort to Plan B...

Debi Holt

No Address Given

This is obviously a cheap ploy by the circulation department to boost sales—ed.

A MORE FASHIONABLE SOLUTION

In the Letters section of the August issue, Mr. Kumagai complains that although he is new to riding a motorcycle, he has already been pushed out of his lane on the highway and on the street by automobile drivers. He wonders if this is a common experience. My own experiences reflect 31 years of incident- and accident-free riding. Others might have had different experiences.

Our three previous cycles have been H-D Electra-Glides. The present bike is a Classic 80. My wife and I have gone together on many trips; on others I have been alone. We lived in midtown Manhattan in the middle of what is probably the heaviest traffic in the world. And we toured the largest cities of the Northeast—all without a scratch or a traffic ticket. The only two things I have done that might be considered "different" by some cyclists are: First, I always observed the speed limit and never attempted to pass traffic between lanes. Second, I always rode well-dressed, with light-colored clothing. No blue jeans, black leathers or dirty, worn-out clothing.

You may not agree, but the tendency is to respect well-dressed people, no matter what their activity. Believe me, people do notice! Many times when we checked in at motels, the personnel at the front desk would say, "You don't look at all like motorcycle drivers." In restaurants, total strangers would strike up conversations and offer compliments. Could it be that the automobile driver who, with a gleam in his eye, was willing to push around the next motorcycle he saw, happened to come upon my wife and me? Perhaps this man said to himself: "These look like nice people. I'll leave them alone."

Ramon Valdez

Miami Lakes, Florida

Quite right, quite right. Anyone not wearing a tie should be refused service on the free-ways after 6 p.m.—ed.

ACCUSATION OF LIMP- WRISTEDNESS

The letter from Leon Clinton in your August issue has me irked enough to write. What kind of a wimp are you, Leon? A cruise control? We are motorcyclists born of the wide-open spaces and freedom from the hundreds of pounds of sheet metal that enclose Mr. and Mrs. America.

If you're not strong enough to twist your right wrist to travel at highway speeds you should either be on a Vespa or a moped. A

remote cruise control from Sears? Well, I grant that you are innovative and creative.

I'll be putting on more than 10,000 miles on my GS1000 this summer via Canada, California and back home again, and when my wrist gets tired (although it never has), I'll think of you and just laugh.

Scott Reed

Stoughton, Massachusetts

Laugh on, Reed. Dozens of letters have come in, asking for more information on Clinton's cruise control—ed.

SMEAR CAMPAIGN

I think it was unfair to compare the chain-drive 1000s to the shafties as you did in the August issue. I've owned nine chain-driven bikes, all of them Japanese multis and twins, and have put more than 100,000 miles on them. Why, it's no trouble at all to check chain tension before a long trip, spray the chain, load up and then recheck the chain. Then you ride 100 or so miles, recheck the chain, hit it with a dollop of lube, ride some more and lube it again. After that, you wash the bike when you get home, smearing the lube around while you try to wash it off. Then you get to try to clean the black spots off of everything from the handlebar back.

Wait a minute! I just realized why I bought my '80-model GS850G. At the end of a 7500-mile, three-week trip, I set my saddlebags on a clean bedspread and didn't leave a greasy spot on it.

One more point: Those chain-drivers might be more efficient, but that is with a new chain on a new sprocket. What about 10,000 miles down the road? Kinks, stretched spots and worn sprockets rob power. Oh yeah, I do have a Mach III chain-gang inmate in my garage for when I want vibration, noise and speed thrills.

Vincent D. Childs

Chico, California

Does this qualify as sarcasm?—ed.

SHAFT-DRIVEN DEALERSHIPS

After reading "Policy Makers" in the July Guide Lines, I felt that a post script was necessary. I think that many dealers are shafting their customers on their purchase of insurance policies.

One dealer who owns a Honda/Yamaha dealership and two Kawasaki dealerships doesn't make available either of the manufacturers' policies, despite frequent requests by customers to do so. Instead, this dealer and others offer "no-questions-asked" policies that are much more expensive than those from Honda or Yamaha—or from other reputable outside sources.

The reason many dealers do this is for a sizable "kickback commission"—much larger than that offered by the manufacturers' arrangement. This same situation occurs when a dealer arranges your loan through his favorite "loan broker," who stiffes you up-

wards of 25 percent A.P.I. I've been on both the selling and buying ends of the deal.

My best recommendation as a former salesman is for the potential buyer to find his own loan and insurance source. They are available out there—and at a much lower cost than through the dealer. Don't be hesitant to call around.

B.K.B.

Redwood City, California

STILL COUNTING

I want to add my name to your list of riders lusting after Yamaha's liquid-cooled 350cc monoshocker. I've owned several two-stroke street bikes, but I don't think that even my Kawasaki H-2 would come close to the experience of riding the L/C. I want one.

Harvey Jeffcoat

Alexandria, Virginia

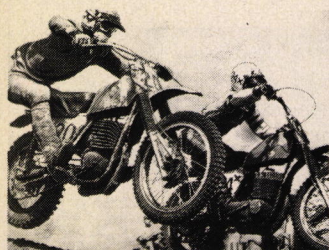
A TESTIMONIAL, DEAR FRIENDS

To Michael Jordan and Paul Dean—who in the hell do you think you are? In the June issue you wrote about the KX420 being so bad. Well, I just got a brand-new one, and I think it's the best there is, so there.

Michael Boudreau

New Glasgow, Nova Scotia

Jordan is pretty sure he's the editor. Dean says the last time he checked he was editorial director. Who do you think you are?—ed. •



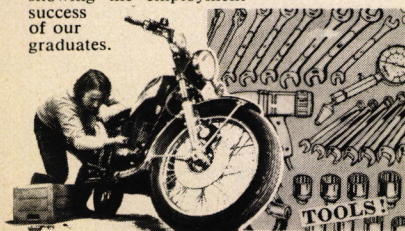
If you ride a cycle for fun... learn how to fix it for profit!

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OCTOBER 1980

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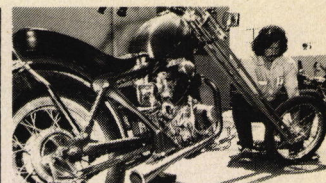
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Motomart

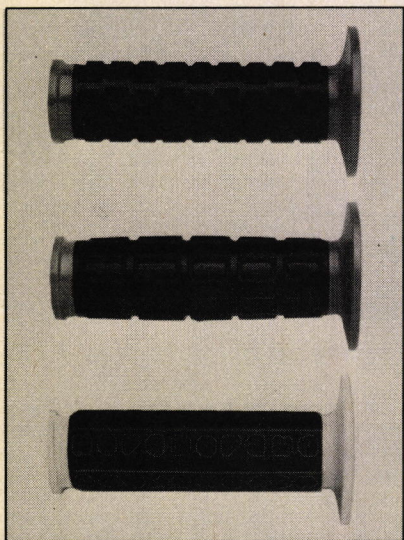
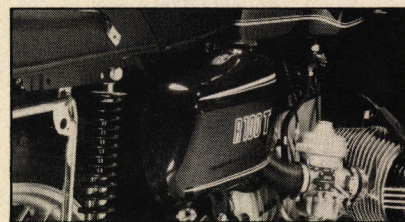
Bringing the showroom home

Camel Pack Canteen: For enduro riders looking for a new way to ride the long haul, Malcolm Smith is marketing this flexible "water bladder." The Camel Pack canteen straps around your waist inside a fabric pouch tightened with a quick-release buckle, which distributes the weight of the water over your lower back and hips. It's available in blue, red or yellow for \$13.95. And you don't have to walk a mile for this Camel Pack: It can be had at any Malcolm Smith dealer, or by contacting Malcolm Smith at 7563 Indiana, Dept. CG, Riverside, California 92504. Or you can call (714) 686-1006.



The Phantom's Pants: MXers who haven't yet found a bucks-up sponsor might be interested in these riding pants from Phantom Rider. For a modest \$54.95, you get double-stitched nylon construction with a complete lining and Velcro closures. Knee-length leg zippers make a post-race strip quick and easy. For more information contact Phantom Rider at 3001 Red Hill Avenue, Dept. CG, Bin #951, Costa Mesa, California 92626. The phone number is (714) 556-7433.

BMW Auxiliary Tanks: For most motorcyclists, increasing cruising range by about 100 miles is only a dream; for BMW owners, it's now a dream come true with Luftmeister's auxiliary fuel tanks that mount just below the rider's saddle. The tanks feature color and pinstriping to match the various models of BMW motorcycles; they are made of aluminum and are lined with a material claimed to be explosion-safe. The folks at Luftmeister say installation is simple, with just one nut and bolt serving to fasten the tanks to the frame of your BMW. Each tank has its own petcock. For more information contact Luftmeister at 580 West 184th Street, Dept. CG, Gardena, California 90248. For faster service, call Luftmeister at (213) 638-6192.



Nava's Novelties: Sometimes, small accessories for your bike can be as important as a major piece of equipment. If that's the case, ponder this gripping idea from Nava. Manopole grips feature a color-coordinated base section with interchangeable black outer sleeves in a choice of patterns. The sleeves can be replaced when worn, or when you want a different grip pattern, making the chore of removing conventional grips a thing of the past. The base is available in red, yellow, blue or black. You will find Manopoles at most dealers.

H-D Arctic Wear: You might not live in the Arctic, but if it's cold where you are consider your Harley-Davidson dealer and his line of Arctic Wear quilted jackets and vests. Both jacket and vest are available in red or tan outer fabric of washable DuPont nylon, and include a polyester fiberfill padding. The jacket has nylon knit cuffs and a left sleeve pocket, two double-entry pockets, a drawstring waist and an anti-draft flap to snap over the zipper closure. The vest has a snap-front closure and twin patch pockets. Arctic Wear comes in sizes Extra-small through double Extra-large.



Drag Specialties Catalog: With the coming of winter you might think of curling up in front of the fireplace with a good book. If you're a motorcyclist, that book could be the 16th edition of Drag Specialties' catalog. It includes 450 pages of more than 5,500 parts, all cataloged into 16 sections. More than 300 color photos are shown. A detailed index is included, along with a Harley-Davidson cross-reference index. Get your hands on this thriller by writing Drag Specialties at 5401 Smetana Drive, Dept. CG, Minnetonka, Minnesota 55343. Or call (612) 935-1000.

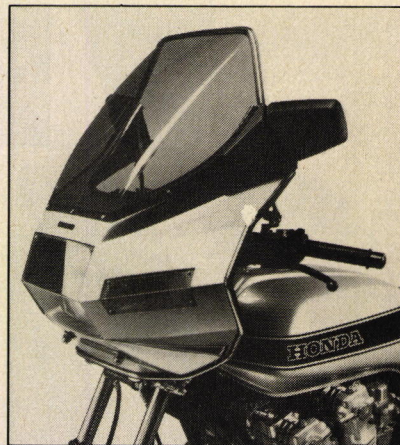
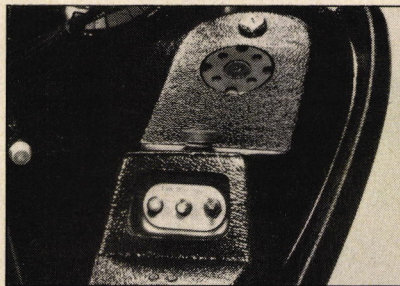


Tees From Kawasaki: You've no doubt seen Kawasaki Z1-Rs, LTDs and KZ1300s on the road, but now they're available on cotton-and-polyester T-shirts from Kawasaki. Each shirt carries the company's logo above the front pocket and sports a color line drawing of the Z1-R, KZ1000 LTD or KZ1300 on the back. The shirts are available from Kawasaki dealers for \$7.95. You can get yours in Z1-R Yellow, LTD Blue or KZ1300 Tan in sizes Small through Extra-Large. If your dealer doesn't stock them, contact Kawasaki at 2009 E. Edinger Avenue, Dept. CG, Santa Ana, California 92711.

Arm Yourself With Armor All: Wax or polish build-up on the surface of your bike might not be disastrous, but it is one of life's little unpleasanties. Now the folks at Armor All are trying to make your life slightly more pleasant with the development of Armor All Ultra-Plate, a chemical treatment that bonds to the surface it's applied to. The manufacturer claims Ultra-Plate cleans the surface while it waterproofs and develops detergent resistance within hours. Further, the product is supposed to inhibit corrosion without leaving deposits around lettering or trim. The Ultra-Plate treatment lasts about six months and shouldn't require removal before re-treatment. You'll find seven-ounce bottles of Armor All Ultra-Plate for sale just about everywhere.



Warn Yourself: When you tire of ticket-toting patrolmen pulling you off to the side of the road, you might ponder the pluses of owning a radar detector. Vetter Corporation is marketing its Fair Warning radar detector to provide you with advance warning of X-, K- and pulsed-K-band police radar signals. You can install this unit in a modified, right-hand locking tonneau cover in your Windjammer III, SS, IV, Vindicator, Vindicator II or Kawasaki by Vetter fairing. The detector, which retails for \$249.00, uses 100 percent solid-state circuitry and is claimed to withstand the effects of vibration, ignition interference, CB signals and weather. For more information, contact a Vetter dealer or write the Vetter Corporation at Dept. CG, Rantoul, Illinois 61866. You can call Vetter at (217) 893-9300.

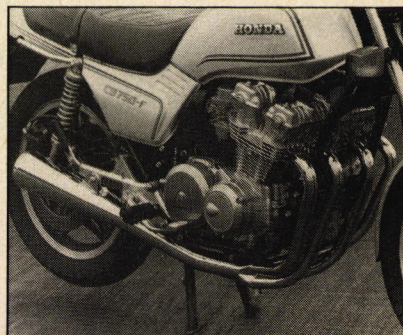


Sporty Fairing: Whichever way the wind blows, you might find Racecrafters' Sport Fairing useful on your next ride. This plastic fairing features integral turn signals, built-in mirrors and chrome trim around the edges. The square headlight housing includes a transparent cover and a boot that encloses the motorcycle's stock headlight assembly. The Sport Fairing is available in black, white or silver; mounting hardware is included. Contact Racecrafters, Inc. at 7801 Canoga Avenue, Dept. CG, Canoga Park, California 91304. Or call (800) 423-5120.



Do-it-Yourself From Haynes: A good investment for Kawasaki owners might be the latest slew of repair manuals from Haynes Publications. The manuals cover Kawasaki model years from 1972 through 1979 and bikes ranging from the KL250 to the KZ1000. The text is based on the complete tear down and rebuild of the model covered. All Haynes manuals retail for \$8.50 at motorcycle dealerships and bookstores.

Piping Hot: This four-into-one exhaust system from Ontario Moto Tech probably won't make a Honda CB750F fly, but it is claimed to add nine horsepower to the engine output. The system weighs about 17 pounds less than the stock exhaust for the 750F and it clears the center and side-stands, too. The folks at Ontario Moto Tech say this exhaust system gives more cornering clearance and allows the engine oil filter to be changed without removing the pipes. For more information on this pipe and other high-performance parts for your CB750F, contact Ontario Moto Tech Corporation at 6850 Vineland Avenue, Unit 16, Dept. CG, North Hollywood, California 91605. Or call (213) 766-7101.

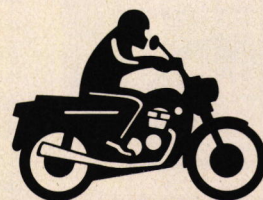


WHO CARES?



Kenny Roberts,
World Roadracing
Champion. *"My
bike makes a truck-
load of noise at 150
mph at Daytona.*

*But city riding, that's a whole differ-
ent thing. I use a muffler designed
for my bike, and if it's not working
right, I don't ride. Motorcycling is
a super sport. But loud, out-of-tune
machines make a lousy impression
on all the non-riders out there. And
that's bad for all of us."*



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MOTORCYCLE INDUSTRY COUNCIL, INC. 

Techspeak

A Sucker For Sophistication

Being vacuum can be an advantage

• Every new technological advance slowly erodes away the basic simplicity of the motorcycle, for so delicate is the interrelationship of parts that once one change is made, another is necessary. Just as the quest for better engines has seen the replacement of the vertical eight-valve twin with 16-valve transverse fours, so too, motorcycle engineers have given us more complex constant-velocity carbs to feed our finicky fours a more precise fuel mixture than conventional slide/needle carbs can deliver.

While this further complication of the motorcycle was probably inevitable, it was accelerated by the intervention of Uncle Sam. Even though the basic slide/needle carb could have been improved to meet EPA standards, it could not have been done easily, and the result would have lacked one special feature of the CV carb. The slide/needle carburetor is a passive device, reacting only to your right wrist. In contrast, the CV carb is an active instrument that responds to the engine's demands as well as those of your right hand. And it's this measure of improved precision that permits the combination of EPA-sanctioned air emissions and people-pleasing power.

To understand the differences between the CV carb and its slide/needle counterpart, you must first realize that both rely upon a venturi as their key component. When air passes through a venturi, its speed increases, causing a drop in atmospheric pressure—like when air flows over an airplane's wing. Instead of lifting a wing, the pressure drop in a carburetor venturi lifts fuel from the float bowl, through metering jets and into the venturi. There it is mixed with air before going to the engine.

In the vast majority of riding situations, the job of keeping this fuel/air mixture constant falls to the slide and needle. The slide controls the airflow through the venturi while the needle attached to the slide meters the fuel passing into the venturi through the needle jet. As the slide rises, so does the needle. And as the engine inhales more air, there's a larger pressure drop, which draws more fuel into the venturi. So far, the slide/needle carb and CV carburetor are just alike.

The slide/needle carb runs into problems, however, when your eager right wrist cracks open the slide at low rpm. The effective size of the venturi increases, but for an instant, engine rpm does *not* increase. As a result, air speed through the venturi slows, reducing the vacuum that normally draws fuel into the venturi. Because this happens

at precisely the instant when the engine needs more fuel to mix with the larger volume of air it has available, the engine stumbles over the lean mixture, a situation worsened by lean EPA-pleasing jetting.

This problem comes about because the slide/needle carburetor registers your demands without taking into account the engine's requirements. While it is possible to use an accelerator pump to squirt a jet of fuel into the engine to minimize this lean spot, the pump only works while the slide is moving. Once the slide stops, the engine again runs lean momentarily.

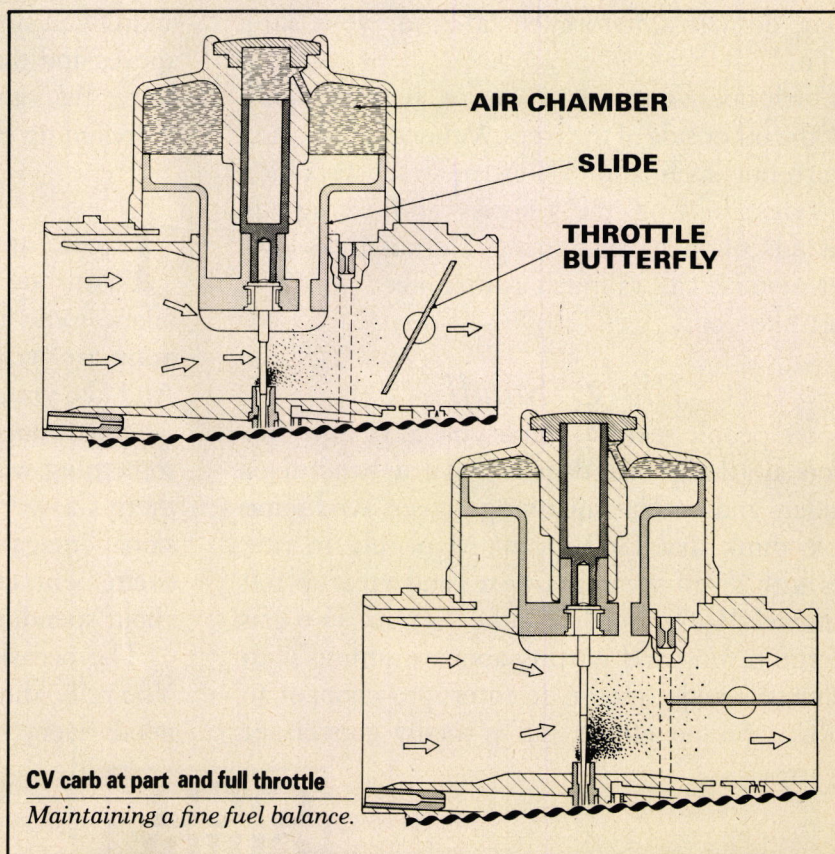
The constant-velocity carb controls fuel mixture far more precisely because it takes into account how much air the engine can inhale as well as the demands of your right wrist. Your right hand is only connected to a butterfly valve between the carburetor slide and the engine. The carburetor mechanism itself moves the slide.

This movement is controlled by the volume of air inside a sealed chamber above the venturi. The slide itself forms the floor of this chamber and an air passageway connects the venturi and the chamber. This

construction makes the chamber as sensitive to changes in venturi pressure as the fuel in the float bowl. When your hand winds open the throttle, it opens the butterfly valve. Then, if the engine is breathing strongly enough, the pressure drop in the venturi sucks air from the sealed chamber above the slide, which in turn allows the slide to rise. Because the slide also controls the needle, it rises at precisely the rate at which fuel can be fed into the venturi. The slide can only move up if there's enough pressure drop to draw a matching amount of fuel from the float bowl. And the precisely controlled fuel/air mixture keeps the engine from coughing.

CV carbs aren't perfect, though. The slide, which is heavier than that of a slide/needle carb, can move too slowly or even too far, causing an occasional stumble or lurch. Further refinement eventually will solve this problem, but at the moment the CV carb's complication serves the trend toward greater precision, allowing you and the EPA to live in greater harmony than would be possible with a slide/needle carb.

—David Dewhurst



AND NOW, A WORD ABOUT WHY YOU SHOULD BE READING CYCLE GUIDE EVERY MONTH:

mō'tor • cy'cles

We don't expect you to buy our magazine because it has tips on gourmet dining. Nor because it tells you what the latest in jogging shoes is. We expect you to like CYCLE GUIDE because it's the best-written, most thorough, most entertaining dose of high-intensity moto-info you can buy. A kind of monthly one-stop shopping center for all your motorcycle input, from new-model tests to inside tips, secrets of the sport, new ways to have fun with your bike and evaluations of the accessories made to help you have that fun.

Street & Dirt

Naturally, we don't confine our interest to one kind of motorcycling. For instance, we think there's nothing in all the world more fun than doing cross-ups with the spectacular MX machinery available today. Not to mention dodging trees and rocks in enduros. In fact, if it's something you can do with a motorcycle off-road, we're sure to do it.

Which doesn't mean, of course, that we don't work the other side of the trees. Whenever we can, we turn our lively and exhaustive street tests into staff rides, blitzing the twisties and eating up thousands of miles in touring. Because we love street motorcycles as much as dirt bikes.

Just like you.

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Some people seem to think you can't have fun on anything that doesn't have a handful of cylinders and eyeball-squashing power. And some people think that God meant Man only to ride bikes with seven-speed gearboxes and a teacup-full of engine. We're not like either group. We can have fun testing and writing about anything with two wheels and a motor, from crypto-chopper to minibike. So our entire staff is totally conversant

with the whole motorcycle spectrum, from tiddler to terror. And consequently, whatever your preferences in displacement and power, you'll find them within the pages of CYCLE GUIDE.

Because fun isn't measured in cubic inches.

Riding & Writing

Ours is a staff of expert riders. Qualified to ride or race almost anything. But it's not our ability to turn hot laps that makes us proud of our work. It's our ability to turn hot licks on the typewriter.

That's because while there are a lot of good riders around, there aren't many who can turn the experience of riding into something others can share and delight in. Or learn from. So we've been very selective about who writes for us, making sure that riding skill is matched by writing skill. The result isn't Shakespeare, but we think our ways of taking you along with us over the jumps, across the apexes and through the woods on two wheels are better than anyone's in the business.

Including Shakespeare.

Them & Us

There are a lot of motorcycle magazines on your newsstand. Some specialize in dirt bikes, some in street bikes, others in choppers. Some are very nice to flip through in idle moments. And like you, because we're full-on motorcyclists, we flip through them too, occasionally even finding something we like to read. But like you, we think there's a world of difference between an "occasional" magazine and one that delivers the kind of excitement, enjoyment and insight we'd feel good about spending our money on.

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**CYCLE
GUIDE**

HARD RIDERS WITH THE RIGHT LINES.

GUIDE LINES

Cycle Guide's Monthly Chronicle of Scoops, Tips, Rumors and Hard Facts

BY LARRY WORKS

COMING SOON

- Rumored bikes just keep on turning real and finding their way into Coming Soon. For example, there's the 1981 **CB750C**, which was rumored to change its looks to emulate the 900C. Plainly enough, it has. It's not purely **cosmetics**, however. The cruiser 750 has added another disc at the front end, as well as a leading-axle air-spring fork. A seven-inch halogen headlamp and raised-white-letter tubeless tires are also part of the new package. You'll probably be seeing that package around some, too, since Honda's records show that the Custom outsells its K- and F-model 750s better than two to one.

- Now for something that you won't be seeing on every street. It's the Krauser MKM 1000. One of the reasons it won't turn up often is simple: Only 200 of the bikes are scheduled to be built. Starting with a BMW R100RS engine, the bike grew up around a **tubular grid** frame weighing less than 26 pounds. From there, aluminum—in the form of a 5.5-gallon fuel tank—and lightweight fiberglass bodywork began to chip away at weight. The result is a street-legal literbike that weighs in at less than **440 pounds**, a 55-pound drop from the stock RS. Getting light has its costs, though. For the Krauserbike, the costs begin at **\$14,000** and go from there.

- Just so that you won't get caught with your jargon down, you should know that a **Mini Moto** is not an off-road race that got cut short. Not even a little. It's a new helmet from Bell that's patterned after the Moto III. The Mini Moto is **scaled down** a bit, with two fewer vent ports and a three-snap visor instead of the III's five-snap shade. It can be had in sizes 6¾ through 6¾. And if a full-coverage helmet won't fit the bill, Bell's also got the **Mini Cross**, a smaller version of the Magnum III in the same sizes as the Mini Moto.

- Of course, Bell is not alone on the hat rack. **Simpson** also has released a new helmet, the **61**. The new model is a fiberglass-Kevlar combination, sporting **vent ports** and a faired-in shield. Simpson's 61 comes in black or silver and carries a Snell Foundation approval.

- One of the more conventional ways to ride something larger than a **Vespa** is to trade it in on something with a bit more displacement. One **less conventional** thing to do is to tack a **sidecar** to the scooter. But if adding another wheel is what you decide on, the Long Beach-based California Sidecar Company, Inc. offers the appropriate **color-matched** unit for your Vespa.

Continued



Honda's 1981 three-quarter-liter cruiser sports leading-axle air fork, twin discs

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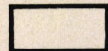


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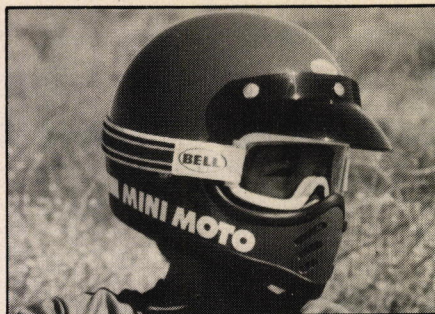


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GUIDE LINES *Continued*



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California Sidecar's Vespa sidehack

Novel answer to the Kickstand Question.

FEDERAL CASES

- On the national scene, research into non-petroleum fuels received a major boost when Congress recently passed the controversial **Synfuels** bill. The bill authorizes a seven-member Synthetic Fuels Corporation to spend as much as **\$20 billion** in fiscal 1980. It further permits an expenditure of up to \$68 billion in the coming years. The program's goal is to promote production of synthetic fuels—500,000 barrels daily by 1987 and four times that much by 1992.

- The passage of that bill will surely lead to increased **gasohol** availability, among other things. In fact, one recent study showed that fully **10 percent** of all U.S. motor vehicle fuel will be alcohol by 2000.

- If for some reason you thought U.S. EPA **noise** restrictions were the only ones around, think again. Legislation is expected in **Great Britain** that would cut the allowable motor vehicle noise level to 80 decibels by 1985. The current limit is 92 decibels.

- Rider education and motorcycle awareness programs have gotten popular lately, and **Wisconsin** has just hopped on the wagon. The state DOT has reacted to riders' complaints that Wisconsin drivers know only enough about motorcycles to be **dangerous**. Literally. An **education** program is in the offing there to inform drivers of two-wheelers' rights on the highways.

- Along somewhat the same lines, if SB468 clears the **California** Assembly Ways and Means Committee, that state will have a new program of rider education.

- Perhaps just as interesting as the rider education movement is the dark side of the same question—especially if you're about to suffer

Continued

The Dualock Frontlight Coupler is a bright idea!

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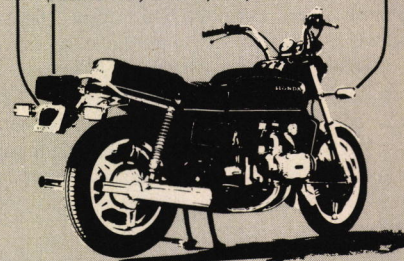
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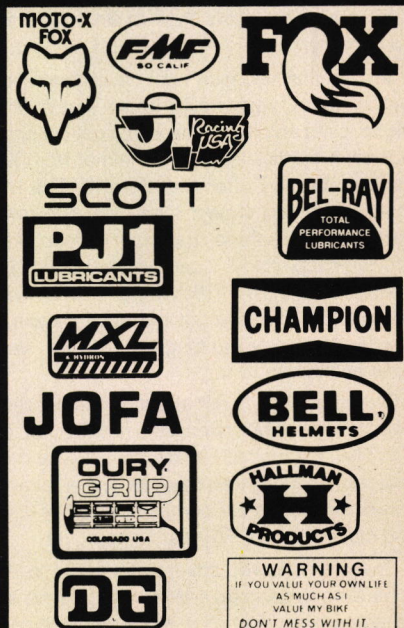


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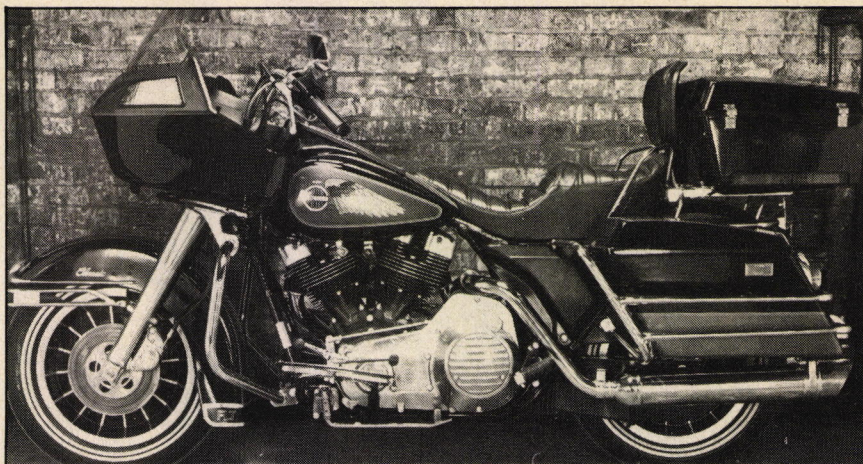
Harley's 1981 Lineup

*Business as usual
in Milwaukee.*

• "Standard Brands" could have been the theme behind Harley-Davidson's press preview of its 1981 models at the Los Angeles Sports Arena. The emphasis is clearly on paint for Harley's new bikes, with old-timey color schemes and logos in abundance. But rest assured. Underneath the facepaint the tried-and-true H-D formula stands inviolate; the sleek shapes of American vee-twin motorcycles remain as recognizable as a claw hammer and nails—and just as resistant to change.

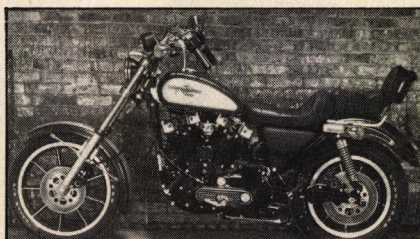
The 80-inch Tour-Glide is still the flagship of Harley's line, though a wing motif has been added to the tank this year. No mention was made of the rumored and awaited Porsche Design V-4. But all is as it should be. It's all standard operating procedure at Harley. Life goes on, cashing in on the gear that made Milwaukee famous.

—Larry Works



80-inch FLT, Flagship of the Harley-Davidson Armada, gets its wings

A classic case of paint-and-tape preparation for the flight line.



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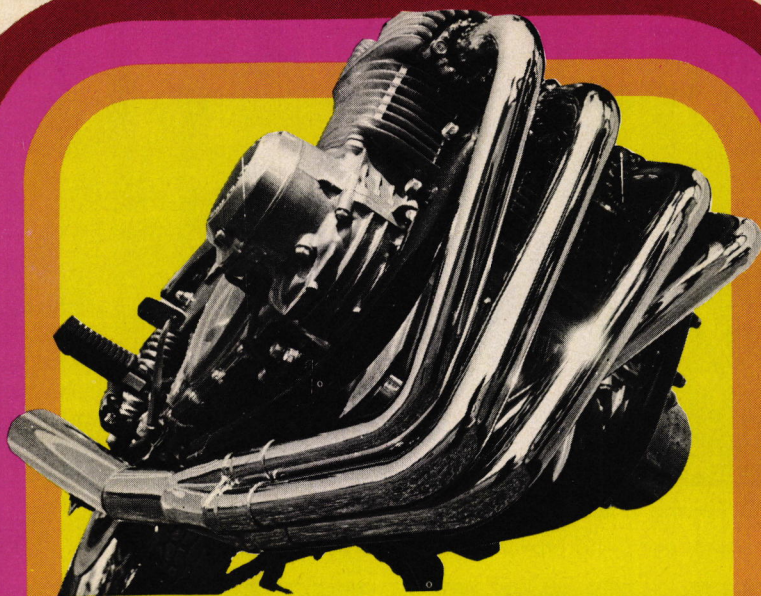
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OCTOBER 1980

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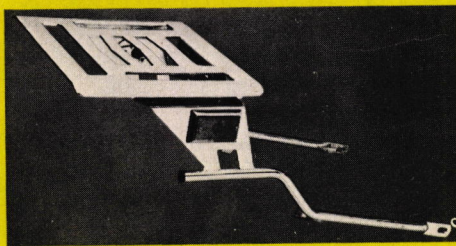
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* Cycle Magazine, May 1978



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GUIDE LINES *Continued*

the slings and arrows of some motor vehicle department in an effort to get or renew a motorcycle **license**. Consider for a moment that the motorcycle license **manuals** of eight states don't even mention using the **brakes**.

- A \$60 million **lawsuit** makes for a fairly hefty club, wouldn't you say? Hefty enough, apparently, to **repeal** a 13-year-old **ban** on motorcycles in the parks of Erie County, New York. A new ordinance that arose from the threat of that sizable suit now allows motorcycles to be ridden on park roads there and to be parked within five feet of roadways.

- Money also played an important part in a recent case in **Colorado**. Irregularities involving the use of federal funds to lobby for an in-state helmet law aroused the ire of the AMA and other groups. Notoriety about the case resulted in the Colorado Highway Department **withdrawing the funds**. Reportedly as a result, not enough signatures were collected to put the helmet question on the Colorado ballot in November.

- Radar is the current dilemma in **Florida**, by all accounts. On one hand, the Senate Transportation Committee voted unanimously in favor of a bill that would require police radar operators to undergo a 40-hour training program before they could be turned loose to monitor the **microwaves**. On the other hand, the Committee voted 4-3 to kill a measure that would have **outlawed** ownership and use of **private radar** detectors. The vote killing the so-called "Fuzzbuster Bill" came shortly after senate analysts pointed out that bans on private radar have been held **unconstitutional** in Washington, D.C. and Virginia on the grounds that they limit the public's right to know what the **government is doing**.

- Another **state** question that promotes hot debate is the issue of **headlight-on** laws. In Delaware the controversy continues to burn. If HB901—currently in the House Public Safety Committee—passes, running a lighted headlamp full-time will be required.

- The same sort of thinking went into **Idaho** bill SF2361, which is on its way to that state's governor. If the measure gets the nod, Idaho will mandate that all street bikes manufactured after **1976** run with headlights on.

- And **New Jersey** is not immune to the lights-on movement. A bill requiring full-time lights is presently in that state's Assembly Transportation and Commerce Committee.

- There is some good news, though, at least for **Pennsylvania** bikers. If HB2338 goes through, motorcyclists there would not have to carry **insurance** on their bikes for extended periods when weather or other factors put them **out of service**.

- One more upbeat note. **Alabama** riders could have a lot more land opened up for **trail riding** if HN510 passes. The bill would relieve landowners from any **liability** for injuries if they allowed free use of their land to off-road motorists.

HARD CASH

- British sources report that the Triumph **Mer-**

Continued

Blazing Happier Trails

Let Clubamerica Douse Your Fires.

• Motorcycling usually is billed as a great adventure. But there are times when even dedicated riders have to admit that the experience can sink to the harassment level. That's why Clubamerica was formed.

Reportedly, Clubamerica is the only corporation in America that offers motorcyclists benefits similar to those of automobile clubs. First-time club members pay a flat fee of \$10, plus either \$25 for a one-year membership or \$45 for two years.

Most of the club's services apply to everyday riding, but a few—such as emergency living expenses, telephone message service and emergency cash—are specifically designed to help out touring motorcyclists. The club will provide emergency living expenses of \$20 per day, but not more than \$60 total (legal in all states but Maryland and New York) and emergency cash of up to \$50 to members stranded more than 100 miles from home.

Within commuting distance from home, one of the most commonly used Clubamerica benefits is probably the pickup/road service. When a member's bike needs

towing or roadside service, he can be reimbursed up to \$25 per incident. This includes labor expenses that are done on regularly used roads or public parking areas, the use of a battery booster, obtaining an emergency supply of gasoline or placing a service call to replace a flat tire. For the member who forgot to plug in his brain in the morning, there is also a locksmith service to replace lost keys.

Maybe Clubamerica sounds interesting but not worth the expense. Perhaps, but if the club decals promising to pay up to \$500 for motorcycle theft information prevent your motorcycle's disappearance just once, your club membership will have paid for itself handsomely. Just ask your insurance agent. Clubamerica also sends its members metallic key fobs with the club's address. When a member notifies the club of his loss, Clubamerica will return his keys if they were found and dropped into a postbox. Personal accident insurance also is provided to members, and they can elect to receive medical ID cards for themselves or for other non-members for an additional

fee. When a Clubamerica cardholder needs medical or legal services, the club provides an emergency phone service that will call three contacts registered by that member.

If medical and roadside emergencies make the most use of club services, legal crises must run a close third. Clubamerica provides funds for bail bond up to \$200 (this service is not available in Virginia, New York, Kentucky or Kansas) and for up to \$500 of attorney's fees (up to \$300 in North Carolina; not available in Tennessee or New York). The attorney's fees are valid for auto manslaughter or auto assault and battery, and for reckless driving or driving to endanger. Under any of these charges the member must have been involved in a traffic mishap rather than in any wilful or malicious action, as defined by law.

Accidents can happen to anyone. And when they happen, Clubamerica can cushion the blow. It is not a substitute for insurance, but it does provide those between-the-lines benefits that can prove even more useful than insurance. At any rate, with Clubamerica's unconditional guarantee, riders can't lose. The newly incorporated club is sending direct-mail information packages to 200,000 registered motorcycle owners, but if you aren't among them and would like to know more, phone (800) 331-4065. —Merry MacTavish

THERE'S LOGIC IN THE LOOK



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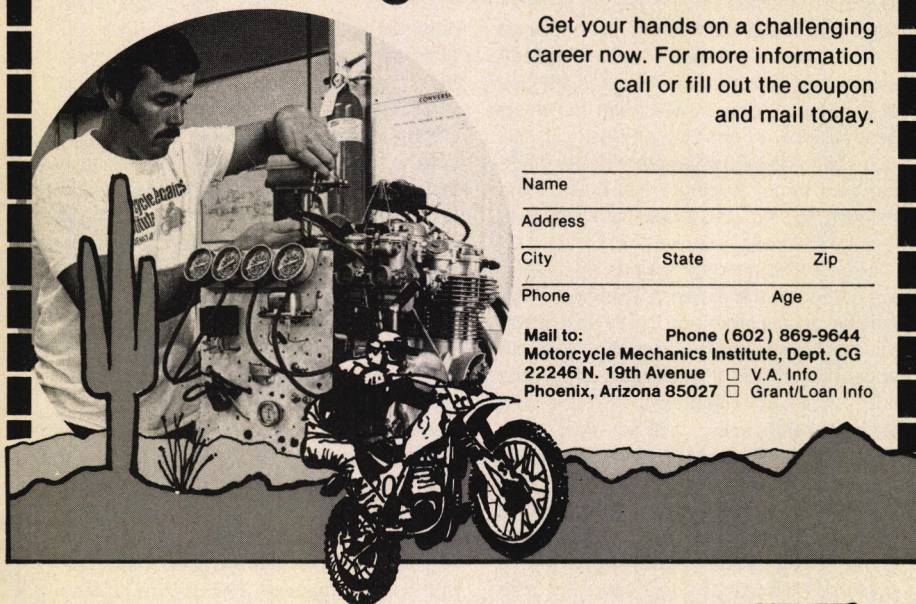
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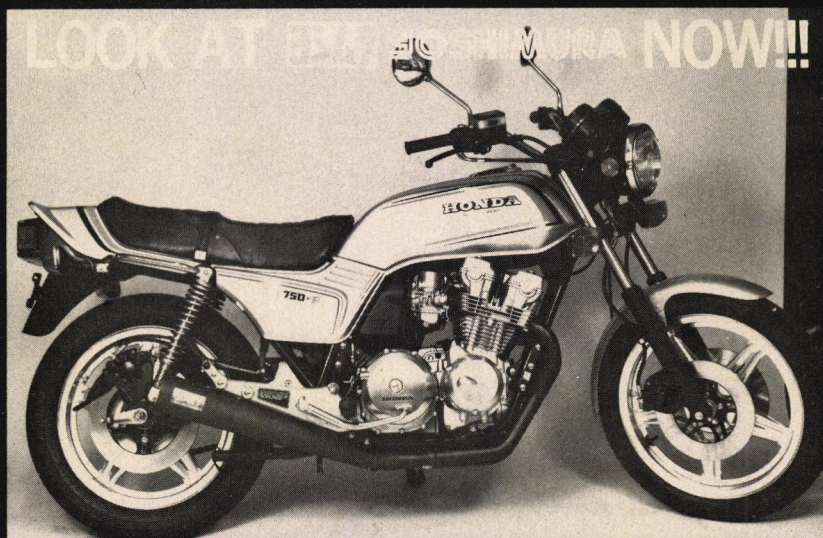
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GUIDE LINES *Continued*

Book Review



Walneck's Motorcycle Classic'fieds.
32 pages, \$5.00 per year (six issues)
Walneck's Vintage Motorcycle Sales
7923 Janes Avenue
Woodridge, Illinois 60515

• It's not easy going through life when one of the few things that gets the old heart up on the cam is an ancient motorcycle. There aren't many people you can share this sort of benighted enthusiasm with. The expense of long-distance calls to Brian Slark to discuss old Nortons mounts up fast, while the thrill of receiving midnight calls from some loon you once sold a few X-5 parts to grows old overnight.

The answer for anyone who wants to keep tabs on the world of aging crocks with pedigrees as uncertain as their reliability records is Walneck's, a bimonthly newspaper devoted to the buying and selling of old bikes. It's built to the old-bike freak's specifications, for it caters to everyone across the U.S. buying or selling an old motorcycle. Naturally, Walneck's appeals most directly to those already committed to old bikes and their restoration, but it will also grab you even if you'd just like to fantasize about owning a Rudge Ulster, a BSA Rocket 3, a Honda Superhawk or even a street-legal Harley KR7T.

Walneck's is more than a shopping guide, though. It's an enthusiast publication. The display ads tell you where to go for the services you need in motorcycle restoration, while the classifieds are leavened with road tests of old crocks and reproductions of out-of-date sales brochures. Through Walneck's you also can subscribe to the vintage-bike enthusiast's bible, *Classic Bike*. This English publication features road tests, restoration tips and histories of long-gone motorcycles. You also can subscribe to the British magazines *Bike*, *Motorcycle Racing* and *Motorcycle Mechanics* through Walneck's.

To be sure, this publication is still struggling to get off the ground, and many of the classifieds come from Walneck's Vintage Motorcycle Sales itself. Nevertheless, the Classic'fieds is still a good guide to vintage motorcycles in this country. And for this reason it is a must for you whether you're an old crock or just like to ride them.

—Michael Jordan

iden Cooperative is just about history. Workers at Meriden voted strongly in favor of **folding** the cooperative so that a British firm, Armstrong Equipment, could step in. Armstrong became involved after Marubeni, a Japanese trading company, bowed out of negotiations for a takeover. Reportedly, the only thing holding back Armstrong is interest—nearly **\$3 million** in interest on a government loan taken to refinance the flagging cooperative in 1975. Talks are underway with the British government to resolve the interest question.

- The next time someone tells you that motorcyclists are self-centered loners, cut them short. Then point to the fact that bikers contributed more than **\$35,000** to the **Muscular Dystrophy** Association during Harley-Davidson's "Artistry In Iron" show at the Los Angeles Sports Arena.

- Got a hankering to ride off with **\$20,000**? It's easy. All you have to do is **out-wheelie** stunt rider Gary Wells. The rules are simple. You even get to pick what kind of machine you want to ride. Then make the same kind of bike available to Wells, put up \$10,000 and take your chances. **Winner takes all.**

RUMORS

- October's lead rumor comes by way of the **Canadian** Pipeline, and concerns a tale of Can-Am's **four-stroke** project that you read here months ago. The latest trickledown is that the thumper runs a four-valve head, with **twin-pipe** exhaust à la Honda's XL/XRs. A single counterbalancer reportedly found its way on board the Can-Am, but apparently it didn't add too much weight—the 500 tips the scale at **250 pounds**, according to northern sources. And if you can believe the rest of the story, that 250 pounds is pushed around by more than 45 horsepower. The last drip from the pipeline is that there will be both motocross and enduro four-strokes in Can-Am's new lineup.

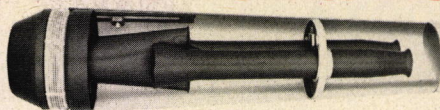
- Another 500 has caught some attention lately, in the form of some early rumors from **Yamaha**. Word from overseas shows that a **new multi** "in the 500cc range" can be expected in the Tuning Fork Factory's new-model introduction. Some specifications that floated along with this bit of gossamer say that the bike will be a 550 derived from the XJ650 and will arrive in neither Euro 650 nor Maxim garb. Other inside leaks make more than passing reference to **chain final drive**.

- And of course, the Yamaha introduction has brought to the fore all of those stories of large-displacement **V-4s** that were making the rounds a few months ago. According to the latest talk, those tales have finally jelled into a water-cooled, shaft-driven **tourer** with a plus-**1100cc** displacement.

- When you start comparing notes, it looks like V-4s have become inordinately popular with the rumormongers these days. The word from **Suzuki** is that the product planners are interested in the cast-in-one-piece look for tourers. The story dovetails nicely with the persistent talk of a 1200cc **V-4 shaftie**. What makes this rumor so interesting is that sources allege that one of Suzuki's priority projects right now

Continued

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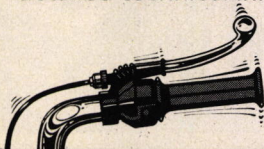


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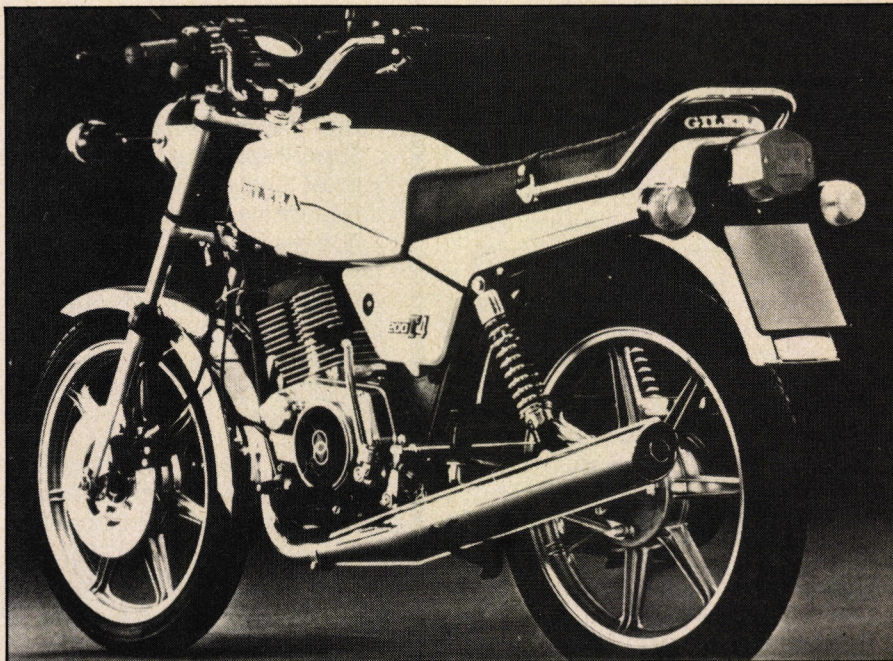
RIDE/REPORT: Gilera 200T4

Legend by Gilera, marketing by Fiat.

- Gilera, the legendary marque that quietly disappeared a couple of decades ago, has had a comeback programmed into its future. One herald of the event was the 200T4.

First, though, a little history. The Gilera family's lack of foresight in the early Sixties allowed their enterprise to slip into an uncompetitive limbo. The firm was pulled back from the edge of bankruptcy by Piaggio. Notwithstanding the continued marketing success of Vespas, however, Piaggio itself was shortly devoured by Kingfish Fiat. As a result, the main products of Gilera in the years that followed were Fiat automobile parts and subassemblies.

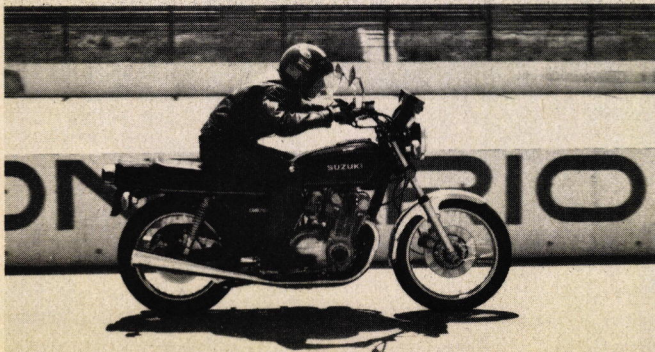
That could have been the end of the story, except that not too long ago someone at Fiat rediscovered the Gilera pedigree. Almost overnight Gilera had a pair of 125cc two-strokes and the 200T4 to peddle. 200T4 signifies a 198cc four-stroke single, with 198cc being the largest displacement that the original 125cc Gilera engine would support without substantive changes.



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Ontario isn't the only track our Suzuki plugs have been around, either. The Suzuki factory racing team, for example, has been using them for years.

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With a history that traces back to an older engine design, the 200T4 could rightly be called dated, but the bike is still competitive. As proof, the Gilera's engine, with pushrod-operated valves and five-speed transmission, serves up about the same power and performance as a Morini 250, but on a platter 50cc smaller.

That overworked cliché "Italian styling" was applied to the 200T4 with dubious effect, the result of a natural enmity of high fashion and 198cc economy. At least the Gilera's tank, fenders and side covers are stamped steel rather than plastic. The rest of the package—disc front brake, aluminum wheels and a sprinkling of instrumentation—seems intended to disguise the notion that the T4's substance might not measure up to its promise. Once stripped of illusion, however, the Gilera stands revealed as a simple, unsophisticated motorcycle with unspectacular performance. It is overdressed and underfinished.

Whatever else it might be, the 200T4 must be counted as a humble reminder of the marque that enchanted the world with the siren call of four cylinders and 10,000 rpm 20 years before the Japanese could manage it. In the end, it is a typical example of automotive marketing. After all, Fiat is calling the shots.

—D.O. Cozzi

is a **full-on tourer** with built-in saddlebags and a fairing that's integral with the lines of the motorcycle.

- If that weren't proof enough of the popularity of V-4 rumorbikes, talk continues that **Honda** will use the **Cologne** Show as the springboard for its **CX**-derived V-4 shaftie.

- Another tale from the House of H is that efforts are being made to bring **Euro styling** to the states. Reportedly, selected bikes in Honda's 1981 lineup will be available with **optional** low bars and rear-set footpegs.

- Certainly one of the more unconventional items that's been added to the notions department this month is that **Bimota** will soon go into production with a four-cylinder engine to complement the firm's chassis kits. The **engine** is said to run 16 valves, lightweight water-cooling, electronic ignition and a six-speed transmission. No final design has been approved, say the mongers, but a displacement of between **900cc-1300cc** reportedly is planned. The last note on the Bimota is that finished production versions could be ready as early as the Milan Show in November 1981.

- By now you've probably got a hankering for a **short cool** one, and chances are that Kawasaki will be able to help out. The stories circulating these days are that you'll find a water-cooled **KX80** drawing crowds of the diminutive to dealerships soon.

- Continuing to hang around the **water-cooler**, there has been talk for some time that **Suzuki** will offer an optional wetkit for the 1981 **RM125**.

- For dirt types of the larger persuasion, **Husqvarna's** recent introduction of the 420 Automatic stirred some interest; but the word that's flying lately is that more is in store. Sources claim to have the scent of an even **larger** open-class **MXer** that's slated for introduction soon.

- Jumping Over There, the skinny from **Triumph** is that a successful refinancing could result in an expanded model line, including a 250cc street bike, Electro and kick-only versions of the Bonneville as well as a chance that the **Hesketh** vee-twin 1000 could be added—quite possibly the only way Lord Hesketh's big vee will ever reach **U.S.** shores.

- But who can tell what might find its way into the **Triumph** lineup. Some sources suggest that the recent unveiling of the **NVT Rotary** could herald a linkup of the Triumph name and rotary engineering.

- The BMW line is a little easier to figure. The Black Forest Connection says that **BMW's multi** project has been relegated to the back burner for several years. The source insists that the Boxer twin will be around awhile longer, perhaps stealing a lick from the new enduro model by running a **one-sided swingarm**.

- Tumbling out almost in the same breath is the rumor of Volkswagen's interest in motorcycles. The latest bit that's been added to this old saw is that a full line of **Volksbikes** reportedly is scheduled for introduction in 1982.

- Higher speeds apparently have piqued the manufacturers' interest, according to sources. But it's not the going fast that's important, they

Continued

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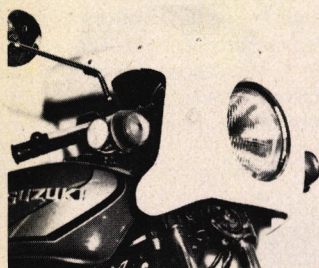
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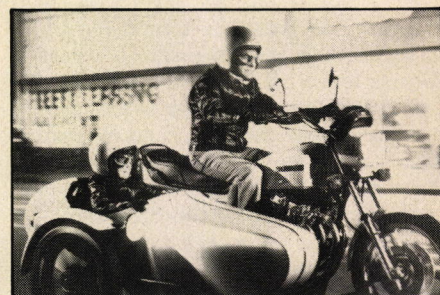
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GUIDE LINES Continued

claim, it's the stopping. Some of the recent gossip has at least one of the majors pulling out the stops to produce an **electronic anti-skid** braking system in time for the 1981 models.

• Much of what you read about unobtainable machinery is tinged with the flavor of **sour grapes**. Not so CYCLE GUIDE's test of **forbidden fruit** in next month's issue. Read it and find out how sweet the bikes can be.

APART FROM THE CROWD



God is my pilot

Chasing hell on wheels.

• While you're contemplating that, file the next item under **Mysteries** Of Life Resolved. A new feature film from Warner Brothers will soon render moot all of those long-argued questions about **His** choice in motorcycles. The film, "Oh God! Oh God!," a sequel to "Oh God!," stars the original God, George Burns. Well, perhaps not the original. At any rate, Burns will be seen in the movie riding a GS750ET Suzuki, complete with sidecar. And all this time you probably thought **God** rode a Harley.



Pontiff passes Nava through tech

Turn it over for collections.

• Whether or not you choose to accept the Suzuki item, you've got to believe that He is at least considering the use of **Nava** Integral full-coverage helmet. Shown above is his agent, **Pope** John Paul II, inspecting a Nava helmet, size Large, prior to a trial run.

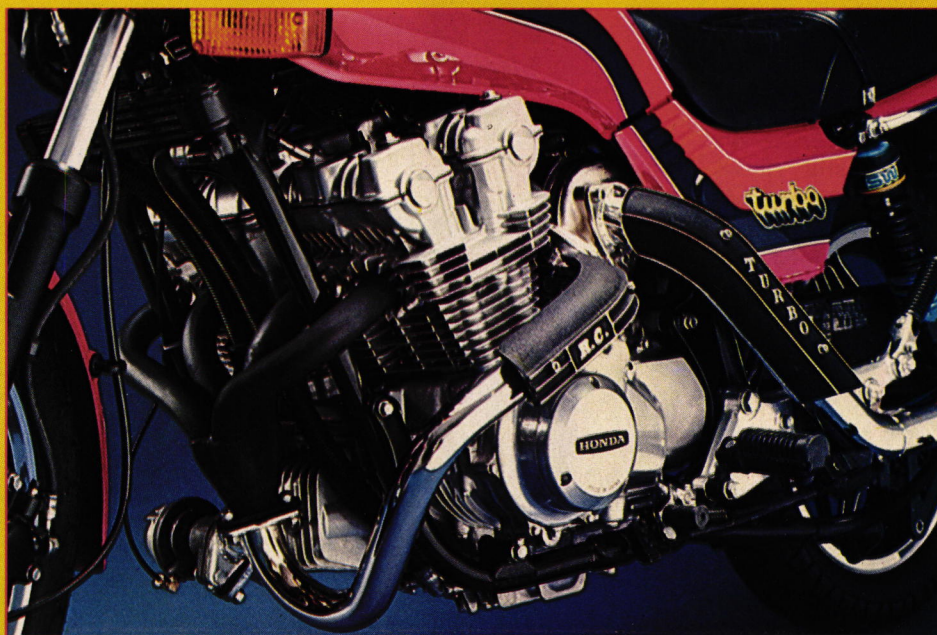
ROAD TEST:

Turbo CB750F

Super Sport

If you think a turbocharged motorcycle should be capable of more than smoky burn-outs and be as docile at 40 mph as it is powerful at 140, you're ready for the turbobike of the future.

PHOTOGRAPHY: CHRIS EASTMAN



BY MICHAEL JORDAN

Turbocharging is what the world is coming to. More horsepower-efficiency is the goal, and turbos offer a more elegant and direct means to that end than multiplying valves, changing combustion-chamber shapes and grinding radical cam profiles. What's more, the gain in performance is almost free, since a turbocharged engine uses its own exhaust gases to drive a compressor that force-feeds the motor its fuel-air mixture, producing more punch per power pulse. That's why you should think of turbocharging as artificial respiration for a generation of engines suffocating in mechanical complexity.

With that vision of the future in mind, the staff of CYCLE GUIDE bolted together its own version of today's ideal street turbo, using a combination of R.C. Engineering's new real-world turbo technology and Honda's good-handling CB750F. The result is not revolutionary, but it represents a major step along the path to a tur-

bocharged tomorrow. Because this is not a futuristic race bike, even though the Porsche-red paint pumps the adrenaline and the turbo script on the sidecovers stirs emotion within everyone from punks on RD400s to bankers in Mercedes-Benz Turbo Diesels. No, this bike is more than just another rabid refugee from the drag-strip; it's a manageable *street* bike, and that's a first for turbocharged motorcycles.

With a couple twists of the throttle to let the accelerator pump prime the engine, the Turbo Super Sport fires up readily, and after a few minutes it settles into the fluctuating idle peculiar to turbo bikes. The unruly growl from the exhaust pipe and the heat cascading from the cylinder head might tempt you to think such a bike should be lit off only on special occasions; but you can snick this motorcycle into gear and embark upon an expedition into city traffic without fearing that it will load up and die at the first stoplight and melt into

Continued

an expensive heap of slag by the third. The huge carburetor requires that you do not grab a handful of throttle frivolously, but on the whole you can treat this bike like a motorcycle instead of a beast and live to tell about it.

And yet the turbocharger boosts the F-model into a new dimension of hyper-speed. Crank the throttle on and the turbo comes up on boost at 3500 rpm, feeding the 16-valve 750 with enough potential energy to enable the Honda to keep pace with literbikes, even with just six psi of boost. Power arrives with a predictable sustained rush that makes the blood surge to the back of your cranium and yet proves perfectly controllable. As powerful as the Turbo Super Sport is, you never feel disoriented, as if the turbo had triggered a reactor melt-down beneath you. As a result, you can put your turbo-power to use on winding roads as well as on Burnout Boulevard. The F-model still glides through left-right-left transitions with an effortlessness that makes you feel invulnerable, and it's sensitive and willing at every turn—but now at a higher speed. The simple 750cc street bike beneath you suddenly has acquired new muscle.

It's the combination of low-speed docility and high-speed potency that makes turbocharging the topic of discussion among motorcycle engineers. Because a turbo ideally should provide an engine with flexibility unattainable by conventional means, as if its power curve had suddenly been boosted upward along its entire length. At *CYCLE GUIDE*, we're fascinated by turbocharging for the same reason. Yet we also know that previous turbocharged motorcycles have compromised flexibility. Warm-up times were long, frequent plug changes were necessary, boost didn't arrive until the tach had swept two-thirds of its way across the dial—and once it did, the front wheel inexorably rose skyward. We weren't satisfied with turbo bikes calibrated for the racetrack. We wanted to create a turbo *street* bike.

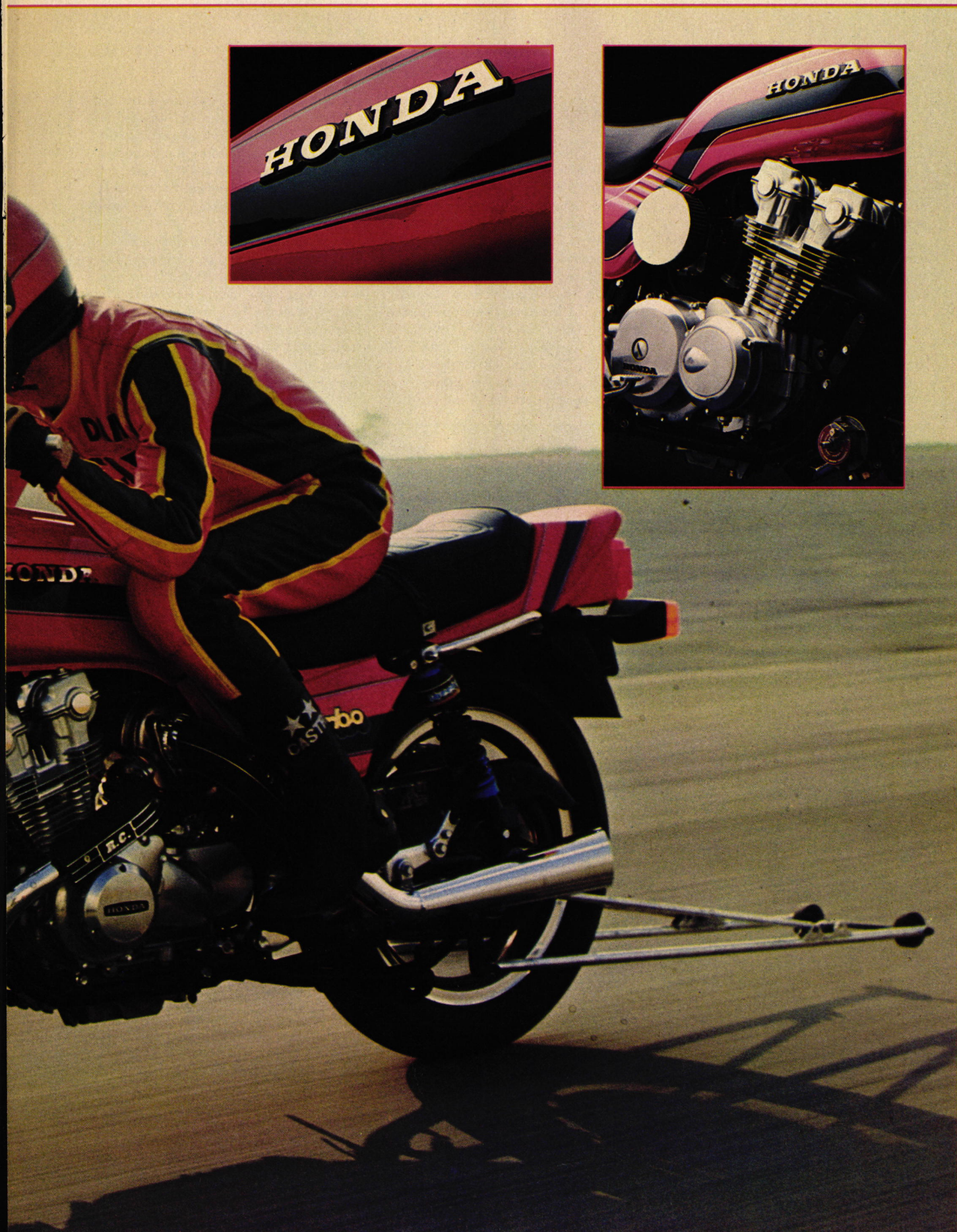
We turned to R.C. Engineering because it is a company that shares our interest in street turbos. Though its initial plunge into turbocharging was inspired by the high-performance market, R.C. emphasizes repeatedly that from the moment its turbo development began two years ago, "streetability" was high on the priority list. And a review of the \$1495 worth of high-boost hardware featured on the Turbo Super Sport confirms it.

To begin with, Russ Collins and his development crew, headed by Art Leach, selected the smaller FF25 Rajay turbo for R.C.'s kits instead of the FF40 model com-



RICHARD GEORGE

Continued



Me and My R.C.: Fuel may be good enough for other folks but a turbo's good enough for me.

• A turbobike is a sensible way of adding more performance potential to your street bike, but to really appreciate how much potential there is, you've got to try it out on the dragstrip. And there you find out that turbobikes and Top Fuel bikes share something in common—a host of exhilarating sensations coming off the start line that cannot be matched. And just like a Top Fuel rider, a turbobike pilot's skill is marked by the way he launches his motorcycle off of the line.

Part of the exhilaration you feel at a turbo-launch comes from the fact that such

a bike is hard to ride away from the line. R.C. Engineering's Russ Collins, whose hobby is riding a 200-mph, double-engine Honda dragbike, warned me even before I pointed the Turbo Super Sport down the Armco gauntlet at Orange County International Raceway that riding a turbo is no cakewalk. "You've got to keep the engine spinning so there's boost when you need it," he said. "Otherwise, it'll bog." As Collins puts it, the task takes a "rider with rhythm." The cigar-chomping Collins wasn't just blowing smoke, either, for he brought along R.C. test rider and Pro Stock

jockey Johnny Kirkwood to help me learn turbo dragrace technique. And even Kirkwood said turbos "are the hardest bikes to get off the line there are."

I figured a good student always lets his teacher set the example, so I watched as Kirkwood made the first passes with the Honda. Then I made some familiarization passes. And after Kirkwood fine-tuned the carburetor, he challenged me the way racers do. "See what kind of time you can get," was all he had to say.

I concentrated on what Collins had said about keeping the revs high while staging, and even more importantly, out of the gate. Johnny suggested "rocking the throttle," or winging it so the tach needle swung from 5500 rpm to 6500 rpm as I crossed the first staging light to get the turbo speeded up. Then, just before triggering the second light, I rocked the throttle harder until the needle swung from 8500 to 9500 rpm.

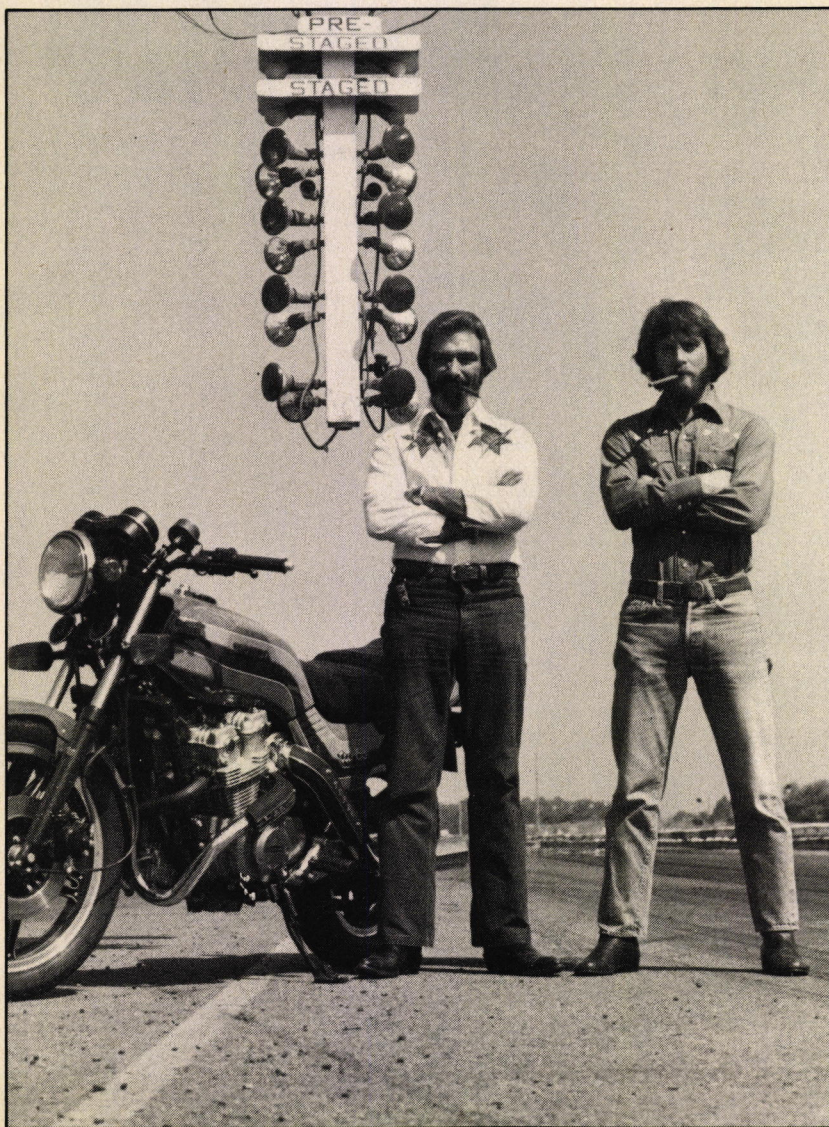
After I staged, I concentrated on two things: the Christmas tree lights and the rocking rhythm of the throttle. When I released the clutch, I had to make sure the tach bordered on the red zone. As Kirkwood and Collins emphasized, this is the most important part of a start for a turbobike.

Anticipating the green, I released the clutch. But I didn't dump it fully, putting a heavy load on the engine that would make the motor bog. Instead, I fed the clutch in, keeping the turbo pumping. The bike didn't come out of the hole as strong as a normally aspirated bike because the rear tire was spinning furiously, but once the tire hooked up the bike leaped forward like an F4F being catapulted from the flight deck of the U.S.S. Kitty Hawk.

After that, things began to happen quickly. I couldn't regulate my speed in first gear with the throttle since I had to keep the turbo spinning, so I had to ride the clutch hard coming away from the line. I could feel that I'd done things just right, and my adrenaline was pumping as quickly as the turbo's compressor blades were spinning. I shifted from first gear by instinct—there was no time to look at the tach for redline. After the intensity of first gear, though, the rest of the run was less dramatic. It was just a matter of tapping the shift lever and tucking over the tank. A time of 11.99 at 113.8 mph was the result, and that without a wheelie bar and using only six psi of boost.

As it turns out, it's the first 100 feet that makes a turbocharged bike so different from others at the dragstrip. It's hard to launch one right, but when you do, the exhilaration lasts long after the adrenaline stops pumping. And the best thing about it is the fact that your post-race high doesn't come from a serious Top Fuel bike. Because a turbocharger injects a little nitro-excitement into a pass on the dragstrip without having to spike the punch bowl beforehand.

—Dain Gingerelli



DAVID CLARK

Asphalt Cowboys in the red-light district of Orange County International Raceway
Russ Collins and Daininger Dain Gingerelli—stogies and turbos at 10 paces.

monly used, expecting that the smaller unit would produce boost at low rpm where the street rider could take advantage of it. Also, R.C. opted for the heavy-duty model, with a sand-cast housing and twin oil-feed lines to the turbo's vulnerable main bearing.

To head off the possibility of too much boost, always a threat with small-size blowers, R.C. fitted a sophisticated adjustable wastegate into the system. The wastegate senses intake manifold pressure and then, through a valve held in place by a spring, controls the amount of exhaust gases reaching the turbine.

Carefully controlled fuel flow is as important to a turbo engine as determining the amount of boost and the rpm at which it should arrive, so R.C. features a few tricks in its intake system. The intake manifold has an internal deflector to distribute fuel evenly to all four cylinders from the single carburetor, while an aluminum gasket between the manifold and the cylinder head speeds engine warm-ups. At the other end of the cylinder head, the header pipes of the four-into-one exhaust system are fairly small in diameter, in-

creasing the velocity of the exhaust gases and further adding to the turbocharger's ability to build boost at low rpm.

The linchpin of this turbo kit, though, is its new Power Master carburetor, designed by R.C. in conjunction with a development team from Keihin carburetors headed by T. Miyasaki. The problem with turbo carburetion systems so far has been that a single carb had to serve the needs of both low-rpm performance and boosted high-rpm running. Most have failed miserably at less than 5000 rpm, offering as much coughing and burbling as smooth running. The Power Master carb attempts to solve the problem with a strong accelerator pump to prime the engine with fuel at low intake velocities, and with a high-speed enrichening circuit (commonly called a power jet) to supplement the main jet when the engine is hungry for fuel at high rpm. Moreover, the carb is insulated from both heat and vibration, so the fuel won't vaporize and froth in the large float bowl.

There were some disadvantages and advantages in mating this entire turbo system to the 750F engine. First, the Honda's connecting rods are weaker than those

found in most other comparable engines, so the turbo's boost pressures had to remain low. On the other hand, the high oil pressure of a motor with a plain-bearing crank serves the needs of the turbocharger perfectly, since turbos like a generous oil supply. Also, there was no problem in fitting the bike with an oil cooler, for drilling out the cast-in fittings in the sump pan and adding a CB900C oil pump permitted the adaptation of the CB900C oil cooling system. An overflow bottle was necessary to keep the crankcase breather from blowing oil onto the rear wheel, but on the whole, the Honda engine was perfectly equipped in terms of lubrication for turbocharging. The only serious problem lies in the fact that the header and turbine feeder pipes must be removed to service the oil filter, and since R.C. recommends renewing the oil at 1000-mile intervals, you'll face this problem frequently.

As you can tell, installing a turbo on your bike is something you shouldn't undertake casually. We didn't. Even though we intended this bike to represent a reasonably economical turbo system, we ordered the installation of stiffer valve and



DAVID DEWHURST

clutch springs. Certainly the likelihood of extreme overrevving as a consequence of missed shifts impels you to keep the engine's valves under control at all costs. Furthermore, stiffer clutch springs provide the added plate-to-plate friction needed to get all of that horsepower onto the ground without burning up the clutch. We also keep boost to six psi to insure durability.

R.C.'s kit is like previous turbo adaptations in that the exhaust pipe fouls your left leg and the K&N air filter on the right

contacts your knee; but from the moment you fire up the engine, the resemblance to other turbo kits ends. First, the exhaust pipe doesn't burn you, even if you're wearing low-cut shoes. Second, boost builds at 3500 rpm, just as advertised, and because of our six-psi decision, the surge arrives predictably. Thanks to the Honda's good breathing and free-revving character, boost and horsepower build fairly quickly in the lower gears. You won't want to risk a powershift with a quick fan of the clutch

though, since there's enough boost at hand to bury the tach needle deep into the expensive end of the red zone should you miss a shift—not unlikely thanks to the Honda's long-throw shifter.

In terms of high performance, the Turbo Super Sport registered an E.T. of 11.99 seconds at 113.8 mph, not impressive for a full-race turbo bike but significant indeed for a 750cc bike you can ride on the street. Frankly, the dragstrip won't always tell you whether a bike delivers usable power. And there's no question that the R.C. bike attains a measure of streetability far beyond any turbo street bike we've ever tested in these pages before.

Not everything is perfect with the Turbo F-model, though. The problem lies in throttle response, the traditional bugaboo of turbocharged bikes. While the engine performs perfectly at small throttle openings and large ones, the transition between the two must be made very carefully. For all its sophisticated high- and low-speed jetting, this particular 38mm Power Master is simply too large for the 750cc engine. Whack the throttle open in any roll-on situation and the engine bogs as intake velocity slows to a crawl. Just as with any bike with a large carb, you must use the throttle discreetly, dialing it on gradually rather than dumping it open suddenly. You can still build speed quickly, but it's better to downshift than to consider whacking open the gas with impunity. As a result, you must resort to the gearbox in any emergency and think twice before pulling out into heavy traffic.

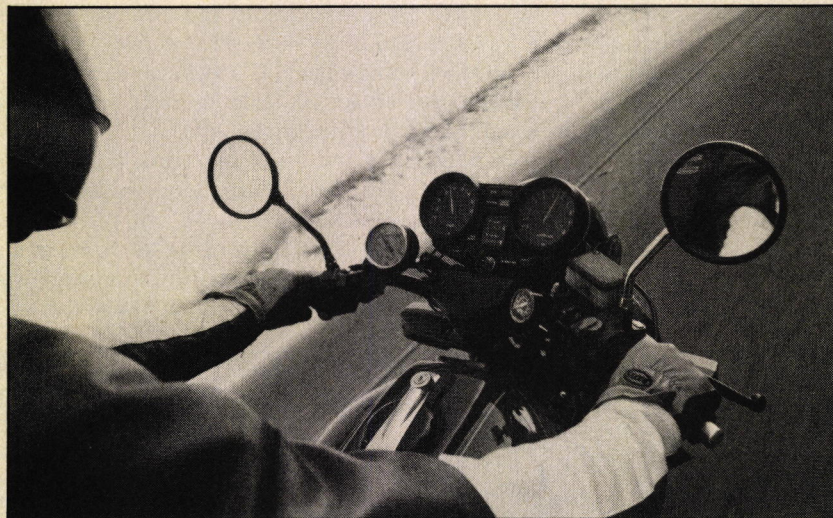
While it's possible to adapt to the R.C. carb's idiosyncrasies, we were still disappointed that the Turbo 750F wasn't quite the shattering breakthrough we'd hoped. Fortunately, R.C. is as aware of the problem as we are and is working with Keihin to produce a smaller carb in a month or two. With luck, that Keihin should make the 750F as tractable as R.C.'s Z-1 turbo equipped with the huge carb.

Even though the Turbo Super Sport isn't everything we'd hoped for, it does have at least one wheel in the future. For this is a turbo bike that you can live with, one that can make you happy in the city or in the country, one that has an added dimension of performance beyond that of any other 750. Most importantly, this turbo won't destroy itself. That's why we're still enthusiastic about the Turbo Super Sport's potential. And that's why we're going to keep it around so we can experiment with it further.

You see, this bike has given us a glimpse of the future. And the future, friends, is turbocharged.

Hyperhandling for the 750F

DAVID DEWHURST



View from Captain's chair aboard the SS Turbo-F; Stardate: 1980

Pirelli, prepare for evasive action; R.C., give me Warp Three.

- When it comes right down to it, most turbo bikes are widomakers, throwbacks to an era when people accepted the potentially lethal combination of a brutal engine and a limp chassis. We began this project with a CB750F because we knew that unlike most turbo bikes, it would have handling to match the performance capability of its newfound lightspeed potential. But rather than leave anything to chance, we also figured a little bit of chassis tinkering would give the bike a final measure of goodness, a dimension of hyperhandling to cope with turbocharged power.

One of the primary drawbacks of any ultra-fast bike happens to the typically upright riding position of bikes built for this country. You can't control a motorcycle if you're about to be peeled off the seat, so we opted for a leaned-forward riding position. Rudy Galindo's Superbike Bar is the choice of many racers on the AMA Superbike circuit, perhaps because the riding position it furnishes isn't radical. You're draped over the steering head gracefully, and the bar is wide enough to provide plenty of leverage for swooping through traffic.

The F-model's suspension only fails when it comes to comfort, but a bit of reserve capacity seemed like a wise choice. Air caps from S&W Engineering gave the fork a more sharply rising rate, fostering more stability under braking and at speed, though they amplified the shuddering (almost like hydraulic lock-up) that the 750 fork exhibits as it nears the end of its travel. S&W Street Stokers at the rear insure consistent, sophisticated damping and permit the selection of a no-compromise spring rate for one-up riding.

A matched set of V-rated Pirelli Phantom tires proved to be the most important modification to the 750F, because they make possible lean angles that look completely insane to onlookers. Even better, we noted no sacrifices in comfort or straight-line stability—the usual tradeoff involved with high-performance tires.

We were ecstatic about the results of these modifications because they so clearly met our goal. We didn't remake the 750F, we just extended its limits. And that's just what we had in mind when we fitted the R.C. turbocharger.

—Michael Jordan

Turbo CB750F

SPECIFICATIONS:

Manufacturer: R. C. Engineering
13300 Estrella
Gardena, California 90248

CATEGORY: street

SUGGESTED RETAIL PRICE: \$4468 (as tested)

ENGINE

Type four-stroke transverse vertical four
Valve arrangement double overhead camshafts, four
valves per cylinder
Bore and stroke 62.0mm x 62.0mm
Displacement 749cc
Compression ratio 9.0:1
Carburetion one 38mm R.C. Engineering butterfly-type,
one accelerator pump
Air filter disposable paper element
Lubrication wet sump
Starting system electric only
Ignition transistorized breakerless
Charging system 12-volt; alternator, solid-state
regulator/rectifier

DRIVETRAIN

Crankshaft-to-jackshaft drive Hy-vo chain
Crankshaft-to-jackshaft drive ratio 1.166:1
Jackshaft-to-clutch drive straight-cut gears
Jackshaft-to-clutch drive ratio 2.04:1
Clutch wet, multi-plate
Final drive type #530 chain (1/8-in. pitch, 3/8-in. width)
Final drive 18/46; 2.556:1
Gear Internal Overall MPH per
gear ratio gear ratio 1000 RPM
I 2.53 15.41 4.9
II 1.79 10.88 6.9
III 1.39 8.46 8.9
IV 1.16 7.06 10.7
V 0.96 5.86 12.8

SUSPENSION/WHEEL TRAVEL, IN.

Front S&W air-spring, 35mm stanchion tube
diameter/6.1 in. (155mm)
Rear S&W Street Stokers, 5-way adjustable
preload/3.1 in. (79mm)

BRAKES

Front dual single-action hydraulic calipers,
dual 11.8-in. (300mm) discs
Rear single-action hydraulic caliper, 12.9-in. (328mm) disc

TIRES

Front 4.10V19 Pirelli Phantom MT29 SuperSport
Rear 120/90V18 Pirelli Phantom MT28 SuperSport

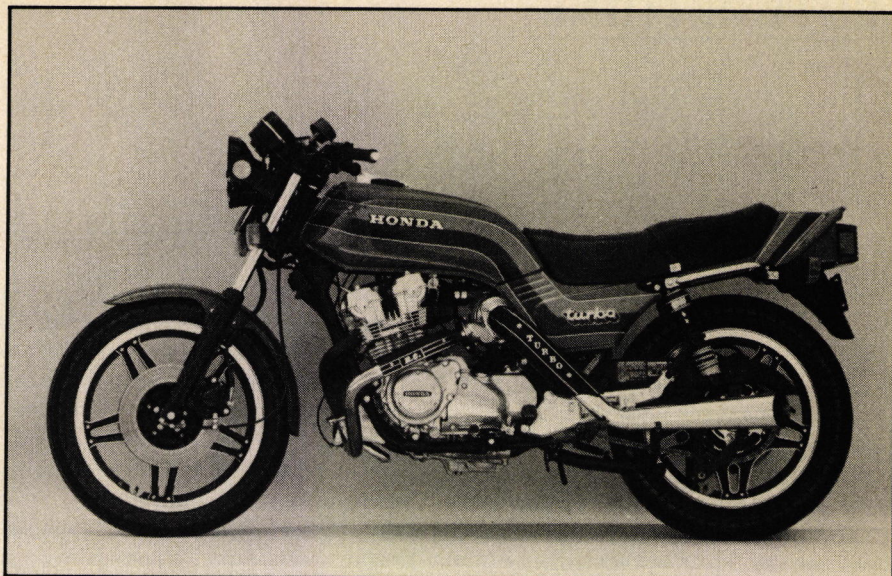
DIMENSIONS AND CAPACITIES

Weight 523 lbs. (237kg)
Weight distribution 47.0% front, 53.0% rear
Gross vehicle weight rating 985 lbs. (447kg)
Wheelbase 59.8 to 61.0 in. (151.9 to 154.9cm)
Seat height 28.5 in. (724mm)
Handlebar width 30.5 in. (775mm)
Footpeg height 13.8 in. (350mm)
Ground clearance 6.0 in. (152mm), at sidestand
Steering head angle 27.5 degrees from vertical
Front wheel trail 4.33 in. (110mm)
Frame tubular mild steel, double front downtubes
Oil capacity 4.7qt (4.5/)
Fuel tank steel, 5.3 gal. (20.0/),
including 1.0 gal. (3.8/) reserve
Instrumentation tachometer, speedometer, odometer,
tripmeter resettable to zero, boost gauge, fork air pressure

PERFORMANCE

Fuel consumption 27 to 39 mph (11.5 to 16.6 km/l)
Range, maximum 143 to 207 miles (230 to 333 km)
Range, reserve only 27 to 39 miles (12 to 17 km)
Speedometer error, 30 mph indicated 29 mph actual
Speedometer error, 60 mph indicated 60 mph actual
Best 1/4-mile acceleration 11.99 sec., 113.8 mph (183 kph)
Stopping distance from 30 mph 31 ft. (9.4m)
Stopping distance from 60 mph 135 ft. (41.1m)

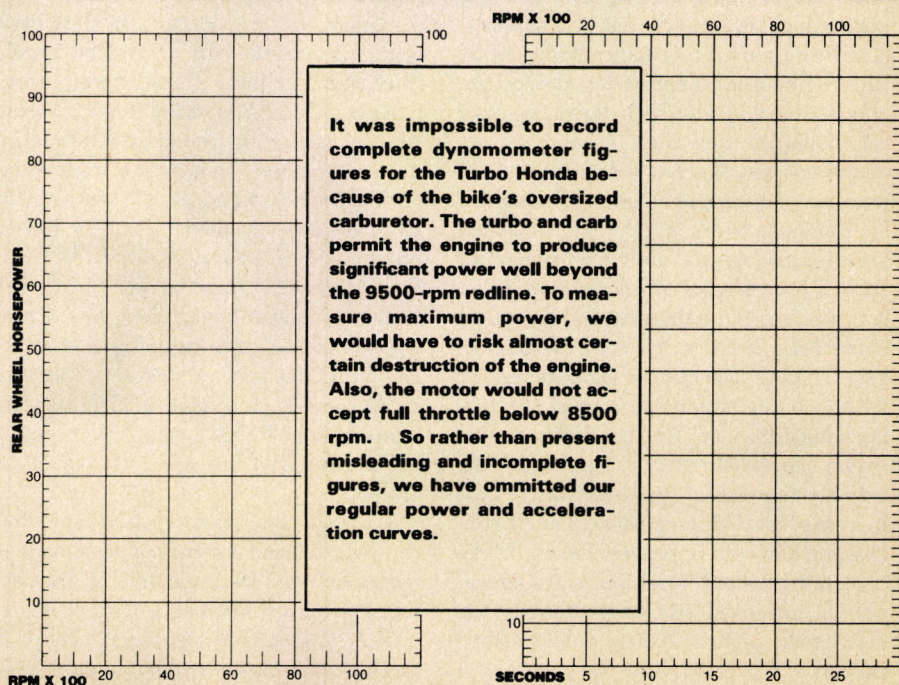
All weights and measurements are taken with machine
unladen and fuel tank empty.



COMPARATIVE TEST DATA:

Make	Quarter-Mile, sec/mph	Top Speed, mph	Weight, lbs	Stopping Distance From 60mph, ft.
Turbo Honda CB750F	11.99/113.8	NA	523	135
Honda CB750F	12.41/106.8	128	524	134
Kawasaki KZ750	12.50/107.8	127	471	134
Suzuki GS1000ET	11.98/113.9	136	528	137
Suzuki GS1100ET	11.43/118.3	140	544	116
Yamaha XS1100SG	11.94/112.6	135	572	129

PERFORMANCE:



FUTURETHINK:

Turbobikes

Motorcycling's Five-Year Plan: A high-pressure program to put boost in every bike and a turbo in every garage.

BY DON FULLER

We motorcycle enthusiasts—you and I—have lived in blissful inefficiency. Perhaps you more than I, but all of us nonetheless. You see, if you ride a two-stroke, only one-fourth of all the liquid energy you pour into your bike's gas tank is converted into useful work. If you ride a four-stroke, things are somewhat better; you might get the benefit of perhaps one-third of your fill-up. The rest we waste in heat rejection.

Much of the heat produced in the combustion process is thrown away for the engine's survival. Cooling fins and radiators cast hard-won heat energy to the passing winds; without them an engine would melt itself into eternity. But most heat energy is lost out the exhaust pipe. As a broad rule of thumb, the energy the pistons push past the exhaust valves is roughly equivalent to the energy they transmit to the crankshaft.

You'd figure that if we can recycle old newspaper and beer cans, we ought to be able to recycle exhaust gases. And you'd be right. Because when it comes to our spark-ignition, internal-combustion Otto-cycle engine, there is a method of recycling, and it's called turbocharging.

Turbocharging is actually a form of supercharging. A supercharger is a sophisticated compressor mechanically driven by the engine that pressurizes the intake charge above atmospheric levels, packing more fuel mixture into the combustion chambers and thereby increasing horsepower. A supercharger absorbs a significant amount of energy, though, so it does little for an engine's relative efficiency, although it does result in more horsepower. A turbocharger, on the other hand, is also a compressor, but it is driven by the exhaust gases as they rush out the exhaust system. Although the supercharger and the turbocharger are a lot alike, the difference between the two is what's important. The primary function of the supercharger is to increase total horsepower. The turbocharger, however, improves efficiency. The peak horsepower it produces is just a measure of improved efficiency—that is, the conversion of heat energy into forward motion.

The relevance of turbocharging to us is

the simple fact that these efficiency-improvers are coming to motorcycles. And when they arrive, they may not be what you've been led to expect. At the moment, motorcycle turbochargers are synonymous with stupefying performance levels. Yet to the man on the seat, the term "efficiency" usually means good fuel economy. Which is why turbochargers lie in our future; they provide both, for any horsepower gain comes from the conversion of exhaust heat into usable work that drives the compressor. Think of turbocharging as free horsepower, a strategy that enables a small, fuel-efficient engine to compete with a large, inefficient one in terms of sheer power production.

Current turbocharging technology in airplanes and automobiles is quite advanced. Motorcycle turbocharging is another matter. Basically, bikes are where cars were 20 years ago, locked into high-performance think. And only aftermarket applications are available. For now, when you talk about turbo bikes, you're speaking of motorcycle hot rods. Just a couple of the more popular motorcycle turbocharging applications confirm it.

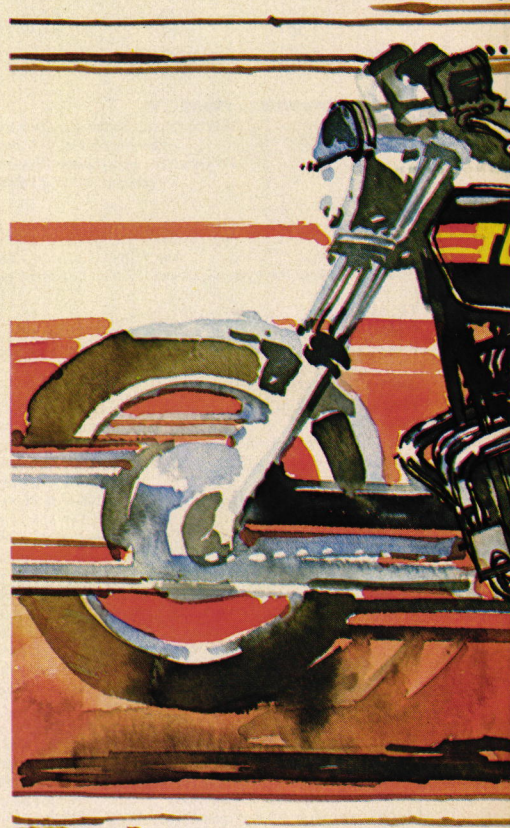
Take American Turbo Pak's newest development, a Kawasaki KZ550 with a small IHI turbocharger from Japan. ATP considers the KZ550 turbo a nice little bike, something with a broader appeal than the company's traditional barn-burners. It's calibrated for 10 psi of boost. And yet in first or second gear, I found it nearly impossible to keep the front wheel on the ground when I pegged the throttle. Even a relatively mild third-gear roll-on brought the front end skyward. As I told Steve Alexander, head of ATP's research and development department, after I rode the 550, a lot of guys are going to scare the hell out of themselves with this bike. But as Alexander said with a kind of gun-fighter's grin, "That's what they want. A lot of guys who buy our kits like to get scared."

A Russ Collins motorcycle is much like the man himself—a rugged statement of individuality. The nameplate on his desk repeats Harry Truman's famous statement, "The Buck Stops Here." And Collins has few illusions about motorcycles. "Why do people buy motorcycles in the

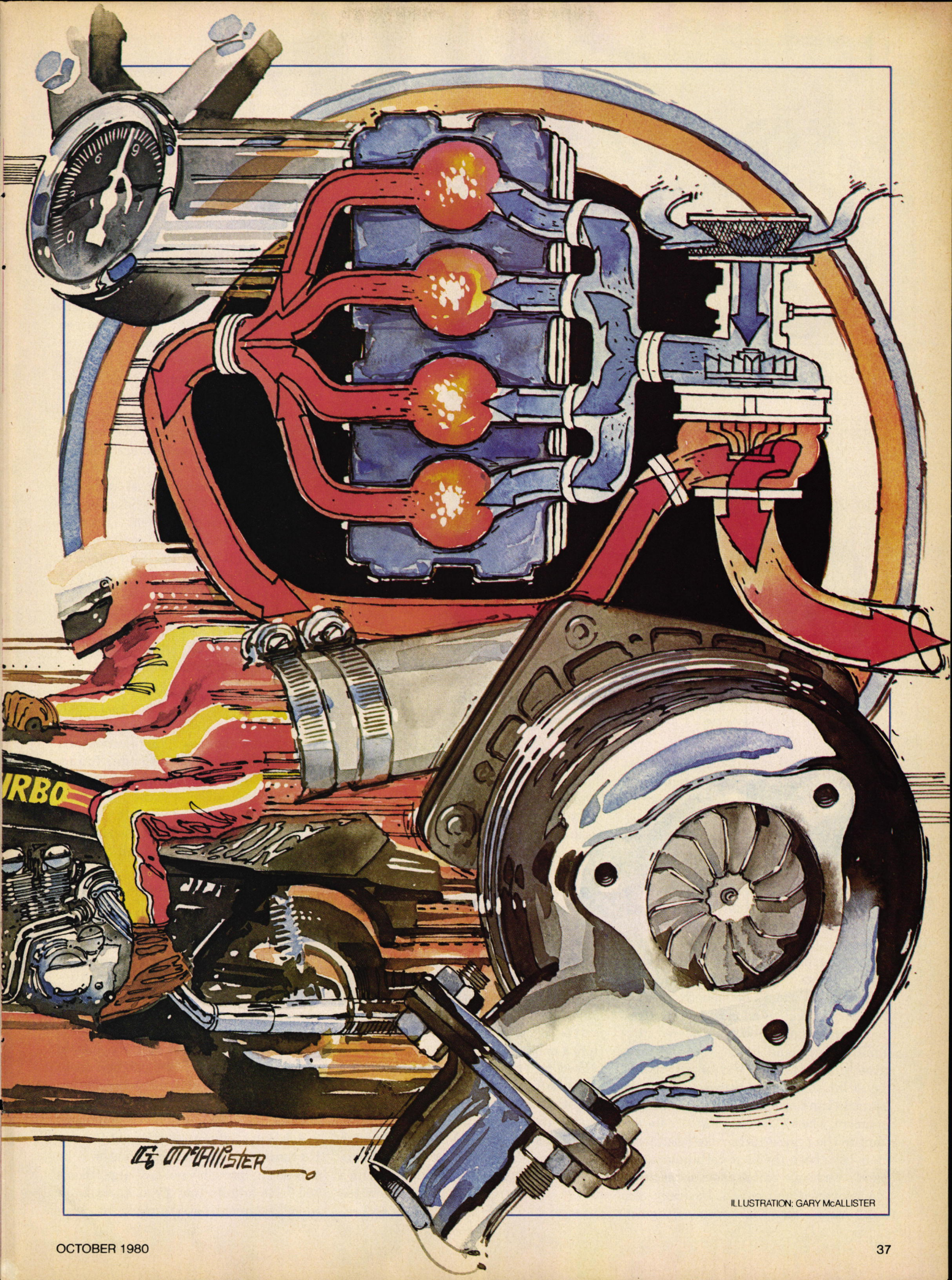
first place?" he asks. Then answering his own question, he says, "They don't buy them to go to work. Motorcycles are big toys for big boys."

R.C. Engineering has taken great pains to make its new turbo kits as easy to live with as possible, and streetability is something that's always used to evaluate them. Nevertheless, the origins of the project lie in competition; and with 12 psi of boost and 150 horsepower, an R.C. Engineering turbo Z-1 is a very serious ride.

The quality of aftermarket turbo kits may vary and the designs may be different, but this much is universal: They are aimed at the high-performance market. You'll find fuel and air mixed by one large, single-throat carburetor that works best at full throttle. You'll find adjustable wastegates so the rider can easily dial himself a quick horsepower increase. And because the people involved in aftermarket turbochargers

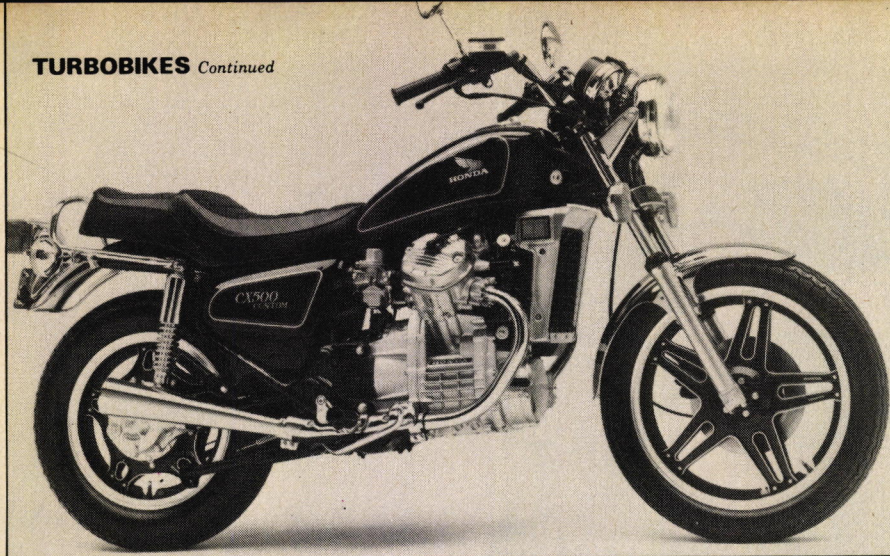


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CYCLE GUIDE



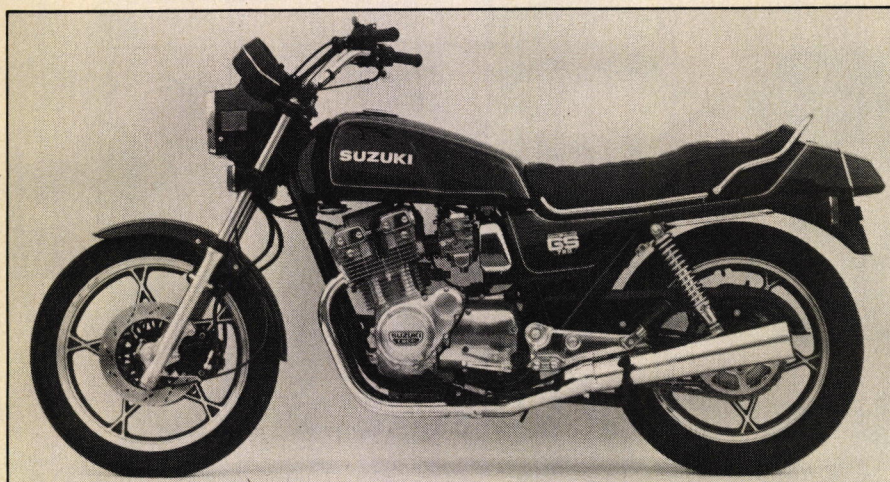
GARY McALLISTER

ILLUSTRATION: GARY McALLISTER



The futuristic solution, small bikes with strong hearts

Delivering more punch for an era of reduced expectations.



Best chance for a turbocharged future, turbo 750, a new breed of hyperbike

Boosting fuel-efficient engines to 11-second quarter-mile capability.

think in terms that make 10 psi of boost sound low and 30 psi just about right, their turbo bikes are capable of ferocious acceleration and not much fuel economy.

This has been the trend of turbocharger development so far. But as both ATP and R.C. admit, such bikes demand serious compromises in street riding, particularly in around-town drivability. Indeed, drivability is the buzzword in turbo technology these days. In automotive engineering parlance, drivability is a measure of how an engine reacts to throttle inputs. Ideally, the response should be smooth, predictable and accurate. And most turbocharged motorcycles up to now have offered drivability that could qualify only as marginally acceptable. First of all, there's boost lag, the interval between when your throttle hand orders more power and the moment when it arrives. Equally important to the typical turbo bike's bad manners have been the large carburetors that produce a toggle-switch effect as the throttle is opened and closed. Basically, you can't make a street bike respond predict-

ably with a huge, racing-type carb, and yet that's what most aftermarket turbo manufacturers deliver.

A survey of aftermarket motorcycle turbocharging can easily leave you with the following conclusions. First, the kits use high-quality components and are well-developed for their intended use—which is high performance. Second, turbo bikes can be ridden on the street, but you probably wouldn't want to, for they require long warm-up periods, deliver jerky throttle response and have a significant amount of boost lag, especially in top-gear roll-on situations. Such turbo systems definitely are not the sort of thing you'd expect to come from a major motorcycle manufacturer.

Even so, the major manufacturers are interested in turbocharging. And it is the potential efficiency of the system that fascinates them. But they also have other concerns. For even though you might bitch about the Feds, the realities remain: A motorcycle manufacturer must comply with a host of written regulations and unwritten codes to stay in business. Noise and ex-

haust-emissions regulations must be taken into consideration. Corporate vice-presidents get ulcers over written and implied warranties. Corporate presidents lose sleep and hair over public image. And such things argue against a turbo CBX sitting on your Honda dealer's showroom floor anytime in the near future.

Yet even so, turbocharging is the coming thing in motorcycles. There are three possible alternatives. One: Someone could say the hell with it and build a turbo monster capable of a 10-flat quarter-mile. Prognosis: Unlikely. Two: There could be sufficient reason to build a turbocharged touring bike capable of hauling two people and all they want with ease. Prognosis: 50/50. Three: Turbocharging could appear on a 400cc to 750cc bike in an attempt to achieve a better balance between economy and performance. Prognosis: The best bet.

How do we know these things? Simple. We went to the people who make the decisions about such things and asked them.

At Honda, Bob Doornbos heads up the Product Research department. Doornbos is knowledgeable about his product and its market, but his credentials also extend to the fact that he's a tough rider to stay with on a mountain road. As a result, he can see the turbocharging issue as an enthusiast as well as a planner and salesman. And his viewpoint is much like anyone's who has a firm grasp of the world's vital signs.

"Research and Development people are getting the message that riders are becoming more conscious of fuel-economy," he notes. And so he sees no application of a turbo to a monsterbike in Honda's future. The CBX represents the apogee of what most riders desire anyway, and "no one is clamoring that we need something better and faster than a CBX." In short, he says, "there is no overwhelming need for more performance."

At Yamaha, Ed Burke holds the title of Product Planning Manager. Product planners are the guys who decide which bikes make it onto the showroom floor. Such decisions are usually cold ones, based upon potential sales success. Yet Burke is an uncharacteristic product planner in that his personal bike is an XS Eleven equipped with an ATP turbocharger. You'd figure him to be an advocate of turbocharged rocketbikes, but when you ask him about it, he says "I don't think turbocharging applies to big motorcycles. It's probably more feasible on a 500cc-to-750cc machine."

Ask Bob Moffit, head of Export Sales at Kawasaki, about turbocharging and he says flatly, "probably not any larger than a 750." He admits that "you never know when you might have to reach into your

Building Boost: How the Turbo Works

• A turbocharger is a very simple device in concept. Two paddle wheels, each enclosed in its own housing, are connected by a common shaft. Exhaust gas directed into one housing spins one wheel, called the turbine. The turbine in turn spins the other wheel, called the compressor, which pressurizes the intake manifold. This additional intake pressure packs more air and fuel into the combustion chambers of the engine and so increases horsepower. The pressure is called boost and it is measured in this country in pounds per square inch (psi).

Yet, what is simple in concept is not easy to manufacture. The turbocharger lives in a brutal environment. The turbine operates in the exhaust stream, where the temperature is about 1500 degrees F. Rotational speeds are awesome, with modern turbos spinning 125,000 rpm or more at maximum boost. All this means the turbocharger designer has serious problems in the areas of metallurgy, balance and lubrication.

More than just bulletproof construction is involved in a turbocharger's design and application, though. The turbo's flow characteristics must match the engine at hand. First, the compressor's output is matched to the intake requirements of the engine. By doing so, the maximum boost pressure is determined at peak engine rpm. Then on the exhaust side, the shape of the turbine housing determines the rpm at which boost begins. In this respect, the nozzle (the intake area of the turbine housing) is crucial.

The nozzle is measured by its A/R ratio (Area/Radius), the relative area of the nozzle's cross-section at a given radius from the center of the turbine wheel. A smaller A/R ratio indicates a smaller, more constricted nozzle that makes the exhaust hit the turbine with greater force and spin the compressor faster, like when you hold your thumb over the nozzle of a garden hose. Yet if too small a nozzle is used, the turbo spins so fast at high engine speeds that there's a risk of over-pressurizing the motor and destroying it. Still, one advantage of a turbo with a small A/R is that it directs the exhaust gases at the turbine with greater force at low engine speeds, so the compressor will accelerate quicker. That means better throttle response.

The question of throttle response is one that has plagued all turbocharger applications. Boost lag is the central problem. Boost lag describes the interval from the instant you open the throttle to the instant there is pressure, or boost, in the intake manifold. Early turbo installations resulted in a lag of two seconds or more. Minimizing boost lag requires a small A/R ratio to accelerate the turbo quickly. But that results in too much boost at high revs—and eventual engine destruction.

That's where boost controls come in. In the beginning, simple pop-off valves were installed in the intake tracts of turbocharged engines. Once a certain boost pressure was reached, it would cause the valve to open, blowing off excess boost into the atmosphere. But such a valve must be located upstream of the carburetor or else fuel will be vented as well as excess boost. And because most turbo systems are set up to draw fuel from the carburetor into the turbo, such a setup rarely is possible.

A more sophisticated method of reducing boost is the wastegate, a valve located in the exhaust manifold upstream of the turbine. The wastegate also is controlled by intake manifold pressure but lets exhaust gas bypass the turbo before the unit can over-speed. Some wastegates are adjustable, and by turning a screw you can increase the preload on the spring that holds the valve closed, permitting more boost to build up before the wastegate opens. Such devices are aptly dubbed horsepower screws by devotees.

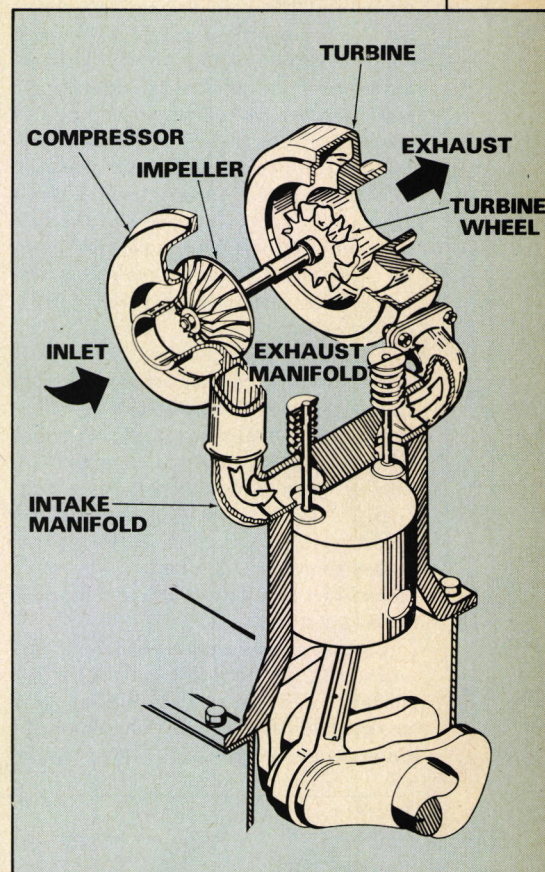
At the moment, turbocharger science is working hard to create better wastegates. Most modern designs feature an integral wastegate in which all the necessary valving and ducting is built into the turbine portion of the system. Actually, there are advantages for both separate and integral wastegates. A separate one is better from a performance standpoint, since it is easier to adjust. An integral type is better applied to large-scale production where adjustment really isn't an issue.

Boost pressures vary widely according to the application. The Porsche 935 endurance racing cars run with as much as 21 psi and boost can be adjusted by the driver. Indy cars run with boost in the vicinity of 25 psi. Typical street cars have five to nine psi of boost. At the present, motorcycle turbochargers are mainly considered performance items, so boost ranges from 10 psi to 30 psi—largely because bike turbos have adjustable wastegates and man is, after all, a competitive animal.

Aside from the general problems of any turbocharger, there are problems specifically associated with motorcycle turbos. To begin with, high boost pressures aren't compatible with high-compression engines. Instead of the 9.5:1 compression ratios commonly found, 7.0:1 would insure longer piston life. Lower compression hurts throttle response, however, so there are trade-offs involved. If both high boost and high compression are required, water injection can be used to cool down the combustion chamber and forestall destructive detonation. Also, high boost pressures create high intake temperatures. Racing cars use intercoolers—cooling radiators for the intake

system—to solve this problem, although motorcycles probably lack sufficient space for such a device.

Lubrication is crucial to turbochargers because of their high rotational speeds; but motorcycle engines with roller-bearing crankshafts might be unsuitable. Such engines might not be able to generate sufficient oil pressure to lubricate the turbo, which is usually fed by tapping an oil galley in the engine. Still, Rajay has done testing that indicates its units might be able to live



with as little as two psi of oil pressure—but there's no guarantee of that. In addition, the increased acceleration available with a turbo can cause lubrication problems in the motorcycle engine itself, for surge can starve the oil pickup in the sump.

Despite all these problems, the turbocharger still promises to be a valuable addition to motorcycling. The beauty of it is that it's a demand system—you only boost horsepower when you want it. The rest of the time, the turbo freewheels along, absorbing little energy from your engine's output. You should think of it as an energy saver. You're able to use a small engine and reap benefits in fuel economy—but you've always got the potential for large doses of horsepower. And your hand decides the time and the place.

—Don Fuller

Continued

High-Tech Turbos: The Automotive Solutions

• If you're looking for sophisticated turbocharger systems, you'll find them in cars, not motorcycles. Right now you can buy a turbo car from Audi, Buick, Ford, Mercury, Pontiac, Saab and Porsche. Several more manufacturers are ready and waiting. And even the lowliest automotive production turbo makes motorcycle systems look like the second string.

In order to understand how motorcycle turbocharging systems will evolve in the future you must look to automotive turbos. And there's plenty of fascinating technology. To begin with, a couple of common characteristics of automotive turbocharging reinforce the different priorities the car manufacturers have. First, boost pressures are relatively low, between five to nine psi. Second, boost lag is minimal and the onset of boost is almost undetectable. There's also a third important aspect of the best automotive turbos: They employ fuel injection. Beyond this, each automotive application of turbocharging holds much of interest for motorcyclists.

The turbocharged 2.3-liter four-cylinder engine used in Ford Mustangs and Mercury Capris has an integral wastegate as well as numerous internal details that distinguish it from the normally aspirated version, including forged pistons and stronger bearings. It also uses an electronic ignition control system that retards spark when necessary to prevent detonation. Maximum boost is set to six psi, and it is difficult to detect boost lag.

General Motors supplies electronic wizardry with its Buick V-6 and Pontiac V-8 turbos. Each features an accelerometer mounted on the engine that senses the onset of detonation at high boost pressures

and retards the ignition accordingly to eliminate it. In addition, the Pontiac casts a beefier engine block for the turbo V-8, and fits stronger pistons, wristpins and main-bearing bolts. The crank has been beefed up and uses different counterweights.

The Europeans have really scienced-out turbocharging. The original Porsche Turbo Carrera had some drivability problems and pronounced boost lag, but the current 924 Turbo shows serious improvement. An important detail of the fuel-injected Porsche 924 Turbo four-cylinder is a pop-off valve that opens under deceleration, routing pressurized air from the outlet side to the inlet side of the compressor. It prevents the compressor from stalling or slowing down during deceleration and so provides better throttle response once acceleration begins again. This is especially noticeable on upshifts. While the 924 Turbo motor is only boosted to 7.5 psi, it's clear that Porsche's extensive racing program has had an impact upon its design.

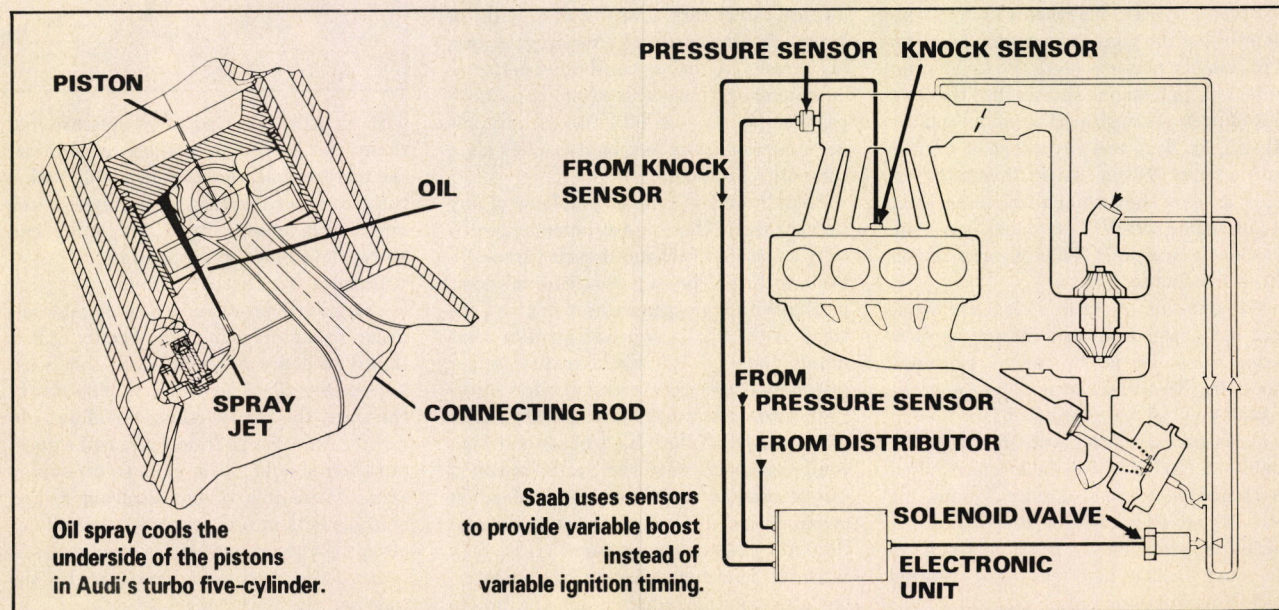
Other engineering advances can be found on the new fuel-injected five-cylinder Audi 5000 Turbo. Again, there are major changes to the engine block to withstand the stresses of turbocharging. Also, the exhaust valves are filled with sodium to withstand high temperatures. An oil cooler has been added to the engine and there are two oil filters, one for the engine and the other for the turbo. One detail that serves to illustrate the depth of Audi's turbocharging development program is the presence of oil-cooled pistons, again to cope with the heat of turbocharging. Below each piston is a small spray jet tapped into an oil galley that directs a stream of oil against the underside of the piston.

The current leader in the leapfrog race for improved turbocharging technology is Saab. But even though its present fuel-injected, turbocharged four-cylinder motor is good, the engine has trouble with detonation because of gasolines of varying octanes. Also, Saab engineers felt the motor didn't optimize the balance between power, throttle response and economy the way they wanted it to. So for 1981, the integral wastegate of the Saab engine's AiResearch turbo is operated by manifold pressure via a line that connects the intake manifold and wastegate diaphragm and then returns to the compressor inlet. There is also a solenoid-operated valve in the pressure line controlled by an electronic black box that monitors engine speed, intake manifold pressure and detonation. And when these three signals reach critical levels, the valve closes off the connector line, opening the wastegate and limiting boost. You have variable boost instead of variable ignition timing.

Since these new controls keep track of the engine's vital signs much more accurately, Saab engineers have been able to raise the engine's compression ratio from 7.2:1 to 8.5:1 and increase boost from 7.25 psi to 10.9 psi. Initial tests show an eight percent increase in fuel economy, thanks to the higher compression ratio, and a 20 percent increase in acceleration from the new motor's fatter torque curve.

On the whole, the example of Saab and the rest illustrates the sort of technology motorcycle manufacturers must be capable of before we're likely to see turbo bikes at local dealerships. Actually, the technology is there for the taking. All we have to do is swallow a little pride and admit the car guys had it first.

—Don Fuller



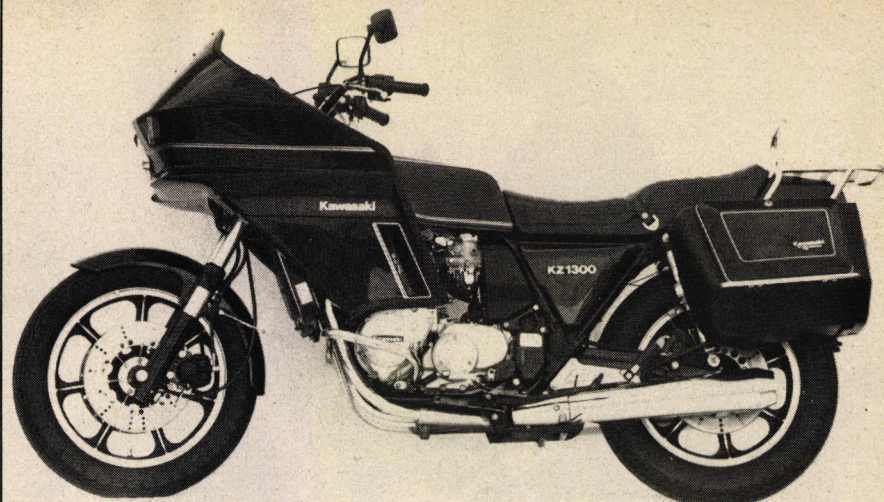
performance bag and come out with an instrument to upstage Brand X," but he also says he doesn't know how long the performance game will last. Moffit points out that the harsh reality of our society militates against turbos, for "in the interests of safety and image problems, the industry would like to be correct with the government and the public at large, so I think we wouldn't want to over-extend ourselves."

Only at Suzuki do you find any deviation from this trend away from high-performance turbos. Gene Trobaugh, Vice-President of Marketing, comments that turbocharging is "a feature that can directly affect the performance of a motorcycle. And we know that performance sells motorcycles." Perhaps Suzuki's success with the GS1100ET, 5000 or more of which will be sold during 1980, puts Trobaugh in this frame of mind. In any case, he continues by saying, "I'd be inclined to put it (a turbocharged bike) on the top end of the marketing scale because the top-end guy most wants the performance, and is usually the most equipped to pay for it."

Unlike the rocketship turbo concept, the matter of a turbocharged touring bike is not as well defined. Doornbos recognizes the possibility, pointing out that "the mid-size touring market is the growing thing." And Moffit allows that the "touring rider is more capable of paying for and historically more likely to want everything but the kitchen sink." Moffit also believes that skepticism about the turbo's complexity could be overcome if such applications followed the lead of automobiles and provided "mild boost and passing power." On the other hand, Trobaugh thinks such qualities as "mileage, smoothness and reliability" are paramount to the touring rider, and a turbocharger might not enhance any of these things.

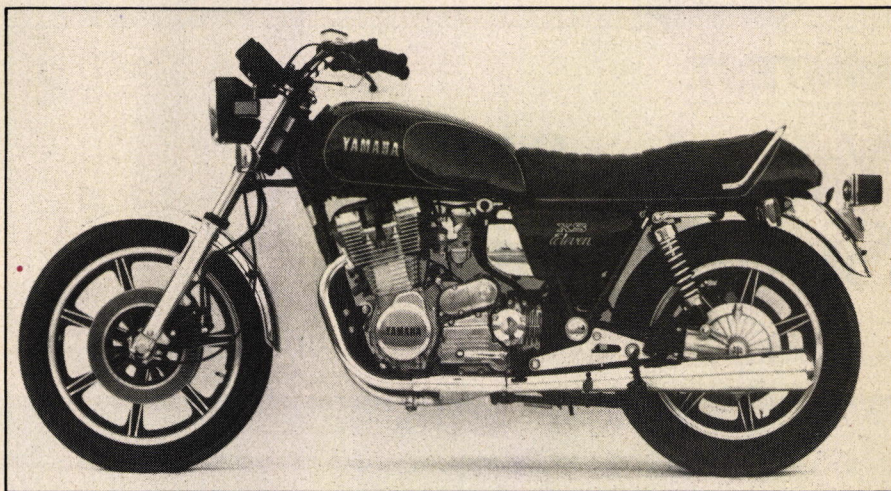
The point upon which all of the representatives of the Japanese manufacturers agree is that mid-displacement bikes are the best choice for turbos. The pragmatic Doornbos says "it seems logical and rational to do it that way." Burke believes "turbocharging would probably be approached from an efficiency standpoint instead of just pure performance."

It may surprise enthusiasts, but the final decision to proceed with production turbocharging may rest with the marketing analysts instead of the engineers. Turbocharging could be a usable high-performance image that could sell a lot of bikes, and at the same time, it could discourage sales because of complexity and cost. As Doornbos says, the primary issue in turbocharging motorcycles isn't the technological problem. He sees only a



Touring turbos could be next for heavyweight haulers

But will the long-distance rider sacrifice simplicity for passing power?



The large-caliber alternative, a blown ballistic missile

Probably too fast and too radical for the approval of corporate lawyers.

need for "the resolve to do it." And Moffit comments that someone will have to stand up and say "Okay. Now that we've got it, are we going to market it?"

If you sift out the highs and the lows of the discussion about turbocharging presently being conducted within the motorcycle industry, you can come to the following conclusions about future turbo bikes:

1) The 400cc rider doesn't have the money to pay for it and the 1000cc rider doesn't need it. Look for an engine displacement between 500cc and 750cc.

2) It is quite possible that any new turbo bike will have to be designed from the ground up. Expect no more than four cylinders—quite possibly less—and probably watercooling.

3) The turbo bike of the future will be much more sophisticated than bikes with aftermarket turbos at the moment. For example, fuel injection simplifies the drivability issue. If carburetors appear on turbo bikes, they probably will be multi-throat, multi-staged versions of carbs seen on autos.

4) Do not expect more than 10 to 12 psi of boost on a production turbo bike. Production bikes will employ turbocharging to enhance all-around performance, not just provide quick quarter-mile times.

5) Such a bike will deliver a combination of fuel economy and performance not presently available.

6) Whatever happens, you'll be surprised.

Will production turbo bikes appear at all within the next five years? From Suzuki? Ask Trobaugh: "I think there's a chance." Yamaha? Ask turbo owner Burke: "It's always discussed." A Kawasaki turbo? The thoughtful Moffit says: "It will be interesting to see if it ever really happens at the OEM level." What about Honda, a company that believes it has a duty to seek new technology? The usually reserved Doornbos: "You can make a bet that there will be a turbo application within the next five years."

Okay, those of us at CYCLE GUIDE are betting on the appearance of manufacturers' turbobikes. And we're looking forward to it. See you in 1985. Or maybe sooner. •



MINITEST:

Yamaha 850G vs. Suzuki 850GT

A sporting proposition: Arrive in style . . . or comfort.

• Most riders would be flat smothered by the full-time opulence of a modern turn-key tourer. Likewise, just the thought of sharing space with a moody, high-strung performance bike for longer than a fast swing through the canyons has killed plenty of vacation tours before they ever got out of the garage.

Fortunately, there is middle ground. Sport tourers, the good ones at least, steal from both extremes in order to attempt the impossible on a daily basis: pleasing most riders most of the time. And that middle ground is selling fast. Yamaha and Suzuki give every impression of trying to occupy the same space simultaneously with a pair of motorcycles so like-targeted that they even share the same designation: 850G.

On the surface anyway, the notion that Yamaha and Suzuki followed the same path to reach the same sport-touring conclusion is as persuasive as all get-out. But once you're past the obvious—that both are 850 shaft-driven multis—the theory goes as flat as a dry five-year-old battery.

Suzuki's 850 champions the *status quo* in this confrontation. Its DOHC four-cylinder engine provides all the necessary credentials for the GS to pass unnoticed in a growing population of fours. And when you add to its four-piston passport a look that's been heralded as unmemorable as far back as the first GS750 in 1976, you've got what seems like—on paper at least—just another faceless street bike.

In the alternative corner, the Yamaha has,



since its 1976 introduction as a 750, offered sights, sounds and asymmetry that no four can match. With its Nortonesque tank sheathed in an understated, Bonneville-inspired paint scheme, the XS is a genuine attraction that turns heads whether it's fired up or not. When you do light both bikes off, the Yamaha clinches the first round. Its exhaust note is deeper than the Suzuki's unremarkable drone, with a lumpy, uneven idle that is somehow more satisfyingly mechanical. More like the way motorcycles are *supposed* to sound.

In traffic, the XS continues to lead on points. Its powerband starts low, and comes on strong anytime the tach shows more than five grand. The DOHC triple churns out plenty of torque, so you can shift a little less frequently than you'd expect—a point you'll appreciate after you've prodded the Yamaha's clunky, long-throw shifter a few times. As a pure urbobike the XS is easier to ride than the Suzuki, which always seems to need a touch more throttle, a shade more clutch to keep up. Everything is in place on the GS, but it takes a bit more coaxing to bring it out.

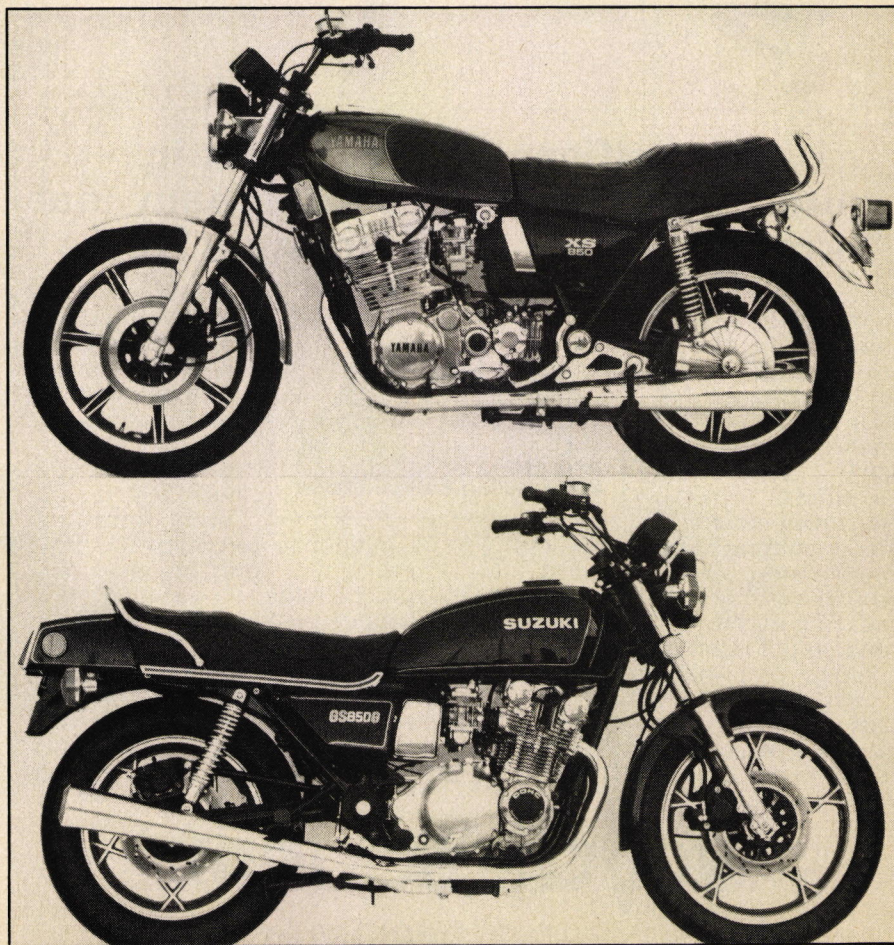
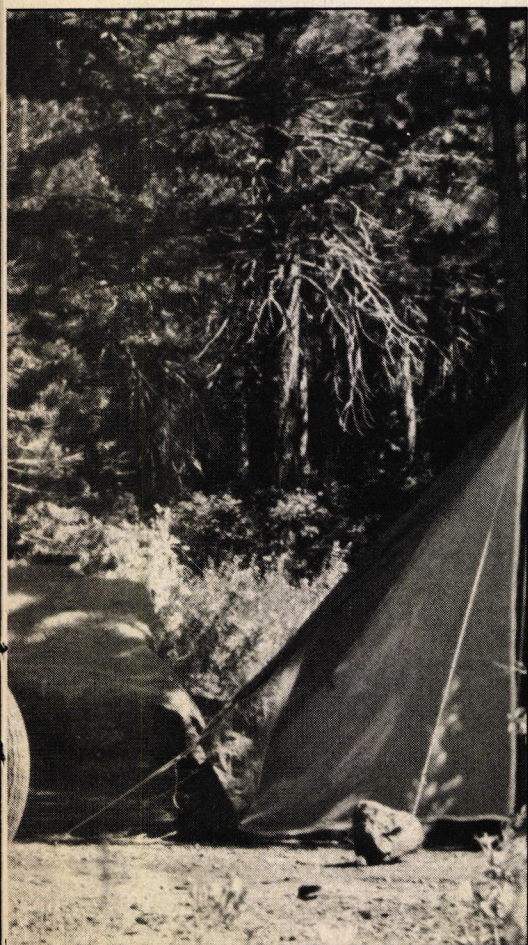
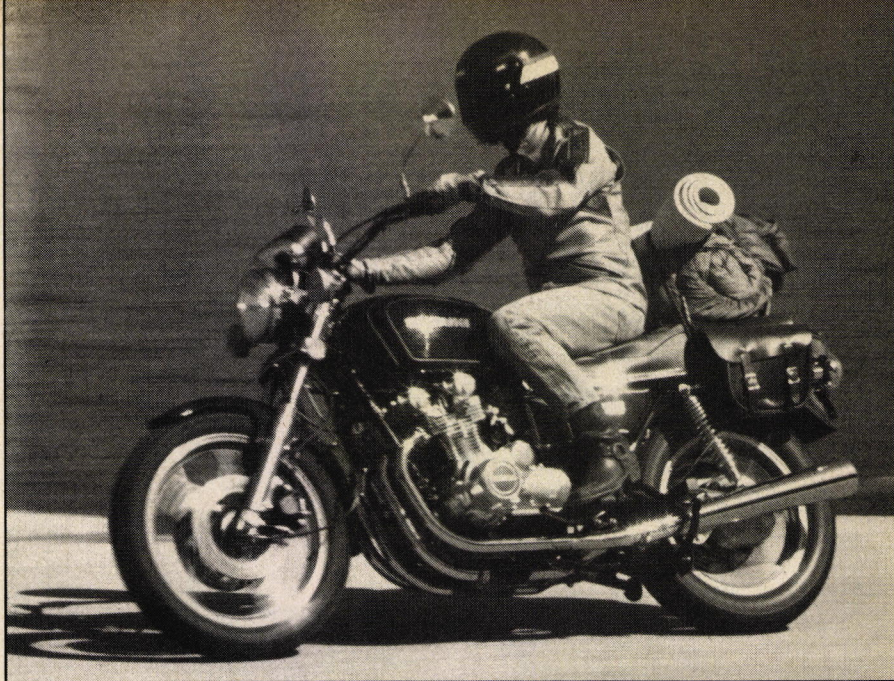
Sport tourers aren't counted as creatures of the city, however. And when the road ends its run from stoplight to stoplight and starts rolling from curve to curve, the Suzuki openly displays handling similarities with its GS1000G stablemate (Aug. 1980 issue). Click its adjustable-damping shocks up to the second of four settings and the Suzuki dives deep into the kind of corners you can brag about later with

just a twitch now and then to show it's working.

With its similarly adjustable shocks set to the same position, the Yamaha keeps in sight of, but not even with, the Suzuki. The XS steers about as accurately, and its two-inch-shorter wheelbase even allows slightly quicker steering, but the Yamaha's Bridgestone Mag Mopus tires don't afford the sure feel of the Suzuki's IRCs. The Bridgestones won't really let go without warning, but every deep turn requires just a margin more trust to get through.

So far there are no real skeletons in the closet, but just playing the twisties and jostling rush-hour traffic is a little like coloring water and pronouncing it Kool-Aid. To get the full flavor of a sport tourer you've got to pull out some maps and get thee hence. We did. After loading up a tank bag, sleeping bags, a tent and some saddlebags from The Leatherworks, Gingerelli and I headed out on a 1000-mile three-day weekend tour to Yosemite National Park to wring out the shafties.

The nature of the beast changes when you



OUT OF SIGHT

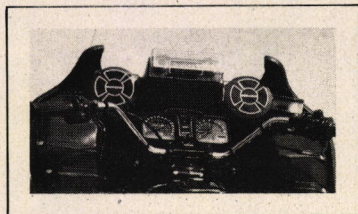
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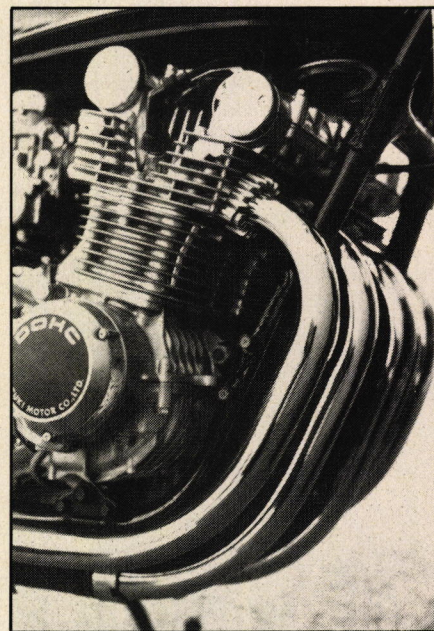
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YAMAHA VS. SUZUKI *Continued*

lash on dead weight piled high and deep. I had new appreciation for the fact that the XS850's seat height was cut by nearly an inch in the transformation from last year's 750 whenever the Yamaha rolled to a stop and I had to support both bike and gear. So, too, I was grateful for the half-dressed Suzuki's ability to roll straight and true without weaving as it came to a full stop.

After you've gotten up to speed on Ike's free-ways you start to think that sport touring is a pretty good deal. What does it matter if your bike lacks the sheer capacity for surrounding you with possessions that a turn-key hauler provides? The tradeoff is worth it. You never lose track of the fine bond that exists between motorcycle and road. That's still a motorcycle you're riding, by God, not some remote-controlled touring platform.

If the head-to-head balance has been pretty even so far, a few hundred miles of Interstate will throw some serious weight in favor of the Suzuki, even though the XS has more roll-on power. Its nearly six-gallon fuel tank has a 1.5-gallon advantage over the Yamaha's, and the



Suzuki's conventional in-line four

Symmetry and smoothness are its forte.

SUZUKI GS850GT

Importer: U.S. Suzuki Motor Corp.
13767 Freeway Drive
Santa Fe Springs, California 90670

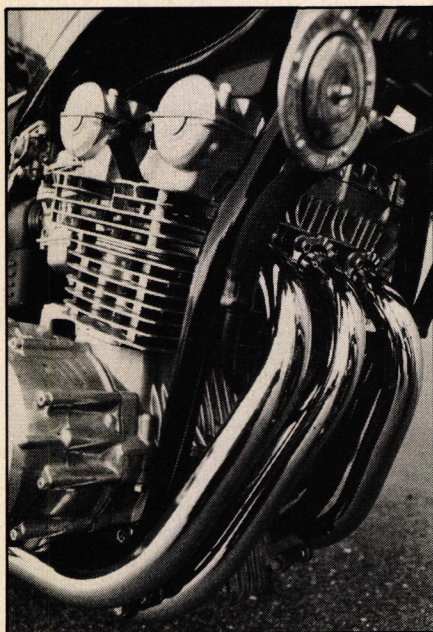
Category	street
Suggested retail price	\$3099
Engine type	four-stroke transverse vertical four
Valve arrangement	double overhead cams
Bore and stroke	69.0mm x 56.4mm
Displacement	843.0cc
Carburetion	four 32mm Mikuni constant-velocity
Gearbox	5-speed
Final drive ratio	3.090:1
Front fork/wheel travel	air-spring, 37mm stanchion tube diameter/5.5 in. (140mm)
Rear shocks/wheel travel	5-way adj. spring preload 4-way adj. rebound damping/3.3 in. (84mm)
Wheelbase	59.1 in. (150cm)
Seat height	32.5 in. (826mm)
Weight	559 lbs. (254kg)
Best 1/4-mile acceleration	12.87 sec., 104.5 mph (168.1 kph)
Top speed (calculated)	123 mph (197 kph)
Fuel consumption	34 to 50 mpg (14.4 to 21.3 km/l)

GS has a comfort quotient that lets you run the tank dry without punishing yourself. The seat is the secret. Suzuki provides all-day cushioning, while the Yamaha's notched saddle starts getting unfriendly just when the century mark shows on the tripmeter.

Compounding the comfort question is vibration. You'll notice the tingle through the GS grips, but you'll remember the Yamaha's dancing footpegs. And when you add in the mileage both bikes got on the tour, it's clear that the XS loses ground on the long haul. Although the Yamaha posted better figures at both extremes of the mileage scale, the Suzuki consistently squeezed out three or more mpg in the middle of the spectrum—by far the greater number of miles.

Confrontations produce winners. It says so right in the book of road test procedures. If there has to be a winner in this faceoff, it's the Suzuki. Both bikes are good; the Suzuki is better. Each offers advantages the other doesn't, but it all boils down to an either-or deal: You can choose to arrive in style... or comfort.

—Larry Works



Business end of Japan's largest triple

Treading water in a sea of fours.

YAMAHA XS850G

Importer: Yamaha Motor Corporation, U.S.
6555 Katella Avenue
Cypress, California 90630

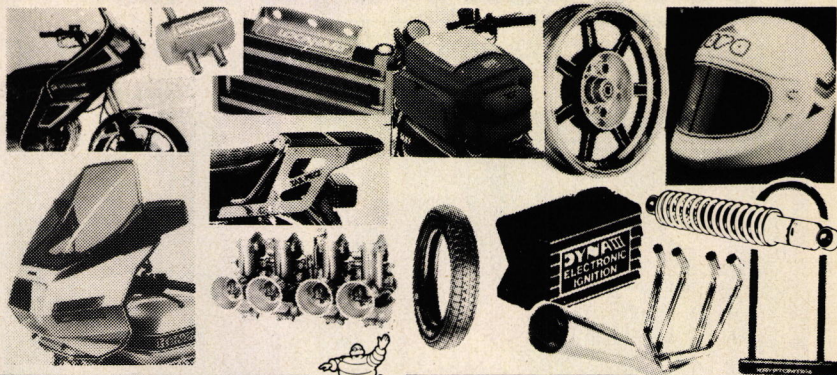
Category	street
Suggested retail price	\$2799
Engine type	four-stroke transverse vertical triple
Valve arrangement	double overhead camshafts
Bore and stroke	71.5mm x 68.6mm
Displacement	826.3cc
Carburetion	three 34mm Hitachi constant-velocity
Gearbox	5-speed
Final drive ratio	3.466:1
Front fork/wheel travel	air-spring, 36mm stanchion tube diameter/6.6 in. (168mm)
Rear shocks/wheel travel	5-way adj. spring preload, 4-way adj. rebound damping/3.6 in. (91mm)
Wheelbase	57.1 in. (145cm)
Seat height	32.2 in. (818mm)
Weight	544 lbs. (247kg)
Best 1/4-mile acceleration	13.3 sec., 100.89 mph (162 kph)
Top speed (calculated)	120 mph (193 kph)
Fuel consumption	.36 to .52 mpg (15.3 to 22.1 km/l)



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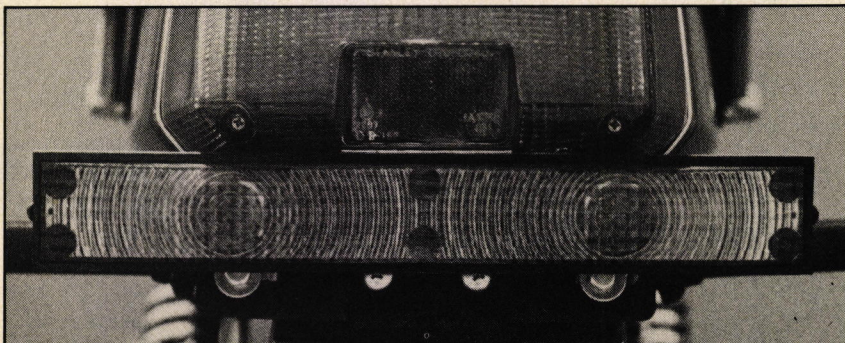
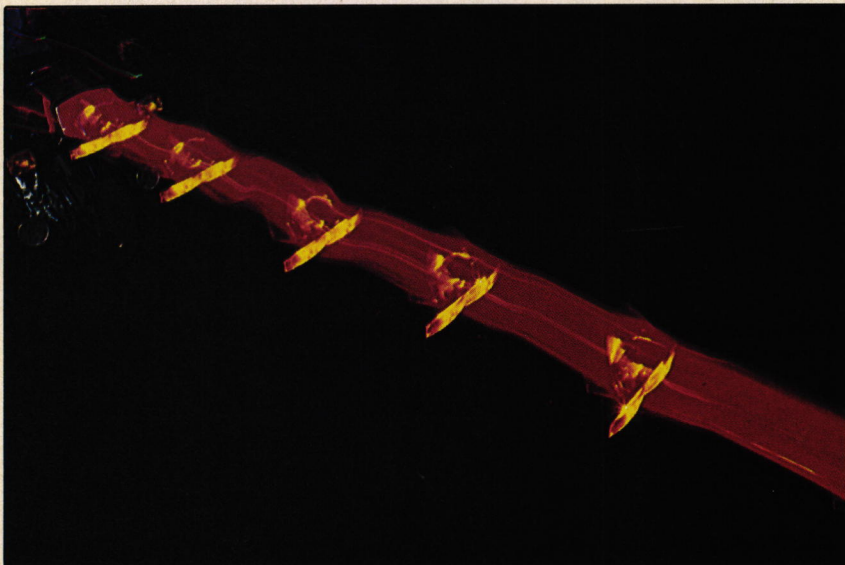
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PRODUCT EVALUATION:

Voevodsky Cyberlite

Putting the brakes on sneak attacks from the rear.



The \$125 Cyberlite, both with and without its double-barrel amber lens

Counting electronic pieces tells you why message-board braking isn't cheap.



• Conventional brake lights tell only half of a life-and-death story. They let everyone behind you know that you're braking, but they fail to disclose just how quickly you're doing it. So until a tailgating motorist can gauge your rate of deceleration (a process that can consume precious seconds), he's not always sure if you're just tapping the brakes or are in the midst of a white-knuckle panic stop. And it's when you're doing the latter and he thinks you're doing

the former that you can become the main course in a deadly car-bike-car sandwich.

This kind of potential danger is what prompted John Voevodsky to develop something that could help prevent rear-end collisions by beaming out more stopping information than is offered by regular brake lights. Voevodsky was majoring in Behavioral Cybernetics at Stanford University at the time, and his studies indicated that some kind of flashing light would be better

than one that just simply lit up when the brakes were applied. The end result of his work is the Cyberlite, a unique brake light that signals a vehicle's various rates of deceleration throughout each stop by flashing on and off at one of six different rates. Which rate it chooses at any given moment depends on the rate of deceleration of the vehicle on which it is mounted. The lowest rate is one pulse per second (when the vehicle is stopped with the brakes applied or when the braking force is very light) and the highest is 7.6 pulses per second (when you're using all of the whoa-power your brakes have to offer).

Although the Cyberlite will attach easily to any 12-volt motorcycle, Voevodsky originally developed the light for automotive use back in the mid-Sixties. He even had the effectiveness of the unit verified eight years ago in an 11-month, 19.5-million-mile testing program involving San Francisco taxicabs. That test concluded that the number of rear-end collisions with Cyberlite-equipped taxis was reduced by 60 percent compared to cabs without the light.

Based on those results, the Cyberlite obviously is not some sort of modern-day snake oil. Instead, it's simply an example of modern-day electronic technology, with the key component being a special little accelerometer which, in this application, is used to gauge deceleration. It consists of five metal capsules partially filled with mercury, each one mounted at a slightly greater downward angle than the one to the left of it. As the bike is being braked, inertia causes each quantity of mercury to try to roll uphill (toward the front of the bike) and complete its own individual circuit by touching a contact at the front of each capsule. Naturally, the mercury within the least-angled capsule succeeds in making contact first, during easy braking, while that inside of the most steeply angled capsule succeeds last, during only the most forceful of stops. A tiny microchip integrated circuit (like those used in pocket calculators) then reads the information fed into it by the accelerometer and, in conjunction with a number of other solid-state electronic components, flashes the Cyberlite at the appropriate rate.

All of those electronics are encapsulated in clear epoxy resin inside a black plastic case that's 12 inches wide and about two inches both high and deep. The Cyberlite uses two single-filament bulbs behind Voevodsky's patented amber lens (a red lens is optional upon request, although Voevodsky claims that neurological studies show the amber lens to be more effective) that focuses the light into a high-intensity beam. The light is so bright, in fact, that California requires the Cyberlite's nighttime intensity to be limited so it won't unnecessarily distract motorists. That explains the presence of the photoelectric cell

built into the left rear of the light's case: It senses the lack of ambient light at night and automatically reduces the Cyberlite's normal 1200-candlepower intensity to 400 candlepower.

From a purely mechanical standpoint, the Cyberlite functions impeccably; and as far as installation is concerned, anyone with a few simple hand tools and a length of electrical tape should be able to muddle his way through. But the real issue here is whether the Cyberlite significantly decreases the chances of being plowed into from behind. And the best answer we can offer is: We think it does. So far, no one has rear-ended the Suzuki GS1100 on which we installed the light; but that doesn't mean a thing, since in the more than 20 years this staff has collectively spent testing street bikes for *CYCLE GUIDE*, none of us has *ever* been rear-ended.

The truth is that the Cyberlite is one of those rare products that cannot be evaluated objectively under controlled conditions—at least not without an expenditure of time, money and manpower far in excess of what is possible for a magazine. So all we can do is offer our opinion—which is that the Cyberlite attracts considerably more attention than a regular brake light—and point to the impressive results of the San Francisco taxicab test.

Even when we do that, however, the Cyberlite emerges as one of the most effective survival devices you can buy. And for two reasons: Its bright, pulsating beam of light gives following motorists an immediate indication of your stopping rate, and the light's strobe effect helps get the attention of those who otherwise might not have even noticed that you were stopping *at all*.

That rear-end protection won't come cheaply, though, for in addition to making you safer, the Cyberlite will also make you \$125 poorer. That high price probably will, in fact, end up being the single biggest reason the highways won't soon be heavily populated with Cyberlites, regardless of *what* they're supposed to do. And some people won't take kindly to the way the light looks on their bike. It can, admittedly, be made to appear an integral part of the equipment on certain machines fitted with saddlebags; but it tends to clutter up the swoopy lines of sporty bikes like the GS1100 and Honda's CB750F.

Still, if the Cyberlite keeps just one inattentive motorist from ramming you from behind, then it could be the best \$125 investment you'll ever make. The light's price does give new meaning to "the high cost of living," but that's certainly a more pleasant alternative than the lost cost of not living.

Cyberlite is available from your motorcycle dealer, or directly from Voevodsky Cyberlite, Inc., 770 Welch Road, Suite 154, Palo Alto, California 94304 (415) 854-1242.

—Paul Dean

PRODUCT EVALUATION: Q-Switch

Living proof that strobe lights work for timing engines, dancing disco and stayin' alive.

• Not everyone in a car is out to get you, although it often seems that way. Instead, the problem is that the guy coming the other way who turned left in front of you simply didn't see you. Neither did the lady who changed lanes right into your path nor the kid who pulled out of a sidestreet just as you got to the intersection. They all might have looked at you, but since you were on a motorcycle, none of them really *saw* you.

Obviously, a flashing brake light such as the Cyberlite is no help at all in these situations, since the danger is originating up ahead of you, not behind. A flashing *headlight*, on the other hand, could mean the difference between life and death—yours, to be specific—by making it easier for motorists to spot you. And that's the theory behind the Q-Switch, a "little black box" that connects to a motorcycle's headlight circuitry. It makes the high beam flash at the rate of four pulses per second—only in the daytime, of course, when the beam is not needed for illumination. The idea is to make a motorcycle more conspicuous to those in front of it so that it is less likely to tangle with two tons of Detroit's finest.

Physically, the Q-Switch is simply a sealed box that houses a collection of solid-state electronic bits. It's approximately three inches square and half an inch deep, and is permanently fixed to a slightly larger steel mounting plate. A three-wire harness emerges from the box's top side, with a small toggle switch located on the top right corner that bypasses the box and allows the high beam to function normally. And that's all there is to it.

Indeed, the most complicated thing about the Q-Switch is finding a suitable place on the bike to attach it. The wiring is easy enough, but the instructions show only a crude drawing of the unit stuck onto a frame downtube, with not even a hint as to what holds it there. So the tastefulness of the finished installation depends entirely on the installer's ingenuity, for there aren't many places where the box will fit naturally. We put the switch on our long-term Suzuki GS1100 which, fortunately, has a couple of pre-tapped holes just below the steering head. Using those, we were able to effect a sanitary installation with the aid of a small piece of strap metal.

In the end, however, the question posed by the Q-Switch is the same as by the Cyberlite: Does it work? Well, the answer is the same, too: We think so. Dotech, Incor-

porated, manufacturer of the Q-Switch, has not subjected the unit to the kind of extensive testing the Cyberlite has undergone, so we can't back up the company's claims—and our opinions—with hard facts. But all you have to do is see the thing in action to reach a conclusion. Because any headlight that's flashing on and off four times a second is *noticeable*, even in bright sunlight. What a motorist does once he sees the light is arguable; but if he's not legally blind and is looking in the general direction, he *will* see it.

Not that the switch is without its drawbacks. For one, any warning light on the motorcycle's instrument panel that advises of a headlight failure will also blink four times a second when the Q-Switch is on. And motorists can get a bit testy when your mega-power halogen light is continually flashing in their mirrors. Moreover, if you forget to flip the bypass switch to "off" before nightfall, you can get an unpleasant surprise when you go for the high beam on a dark, twisty road and are greeted by a disco-like strobe-light effect.

Still, there's lifesaving potential here. The Q-Switch makes your bike more noticeable, and as any street rider with more than 100 miles under his belt can attest, being noticed is the better half of the survival game. That makes the \$63.95 for the Q-Switch seem like a screaming deal.

Q-Switch is available from any motorcycle dealer, or through Dotech, Inc., P.O. Box 3322, Charlotte, NC 28203. (704) 523-6722.

—Paul Dean



Q-Switch "little black box" on GS1100
Safer days through disco-night lights.

Start



12-Month Unlimited Mileage Warranty

*Compare the 1981 Suzuki GS Model Limited Warranty with the warranties offered by any of our competitors. This warranty furnished only in the 48 contiguous United States and Alaska.

an economy kick with one finger.

Chances are, you know bikes are easy on gas. And easy on the old budget.

But perhaps you think they're not so easy to operate. Perish the thought. And take a look at Suzuki's new 1981 GS-450L and 450E. Each has push-button electric starting (no kicking). Fully transistorized ignition (no points to adjust). Mag-type wheels (no spokes to tighten). Gear position indicator (no guessing which gear you're in). Front disc brakes (no fading). Smooth suspension system (no rough bumps).

And a twin-cylinder 4-stroke engine with a gear driven balancer (no vibrations).

You can even get these easy-handling bikes in your choice of easy-to-take styles. There's the low-rider look of the GS-450L. Or the sporty look of the GS-450E.

If all that weren't enough, each comes with a short price tag and a long 12-month unlimited mileage warranty.*

So you see, an economy kick can be a real kick.



Suzuki 1981  **The Performer.**



Member Motorcycle Safety Foundation. Ride safely. Always wear a helmet, eye protection and appropriate riding apparel.

TRAIL TEST:

Husqvarna 420 AXC Automatic

*A Hydra-matic Husky,
just the thing for all you
shiftless dirt riders out there.*

BY DAVID DEWHURST



Unlike most competition bikes, Husqvarna's new 420 Automatic has to win more than just races to be successful; it has to win the confidence of the dirt-riding public. This nation of stick-shifting bembusters needs to be firmly convinced that automatics *really* work and, more important, that there's some noticeable advantage to be gained in riding one. We also want to be told why automatics are even necessary. For while we continually clamor for faster motors and longer suspensions, an automatic gearbox seems like an answer to a question dirt riders have never asked.

Actually, the question was asked by the Swedish army a number of years ago, and it was in response to its specialized needs that Husqvarna developed the first Automatic, an olive-drab 250. Sweden's military tacticians, you see, figured that the army should have a motorcycle that even the non-bikers in its ranks could pilot over rugged terrain. And once the army bike reached fruition, Husky's engineers reasoned that if soldiers could benefit by not shifting gears, so could less-experienced civilian dirt riders. But while the Automatic successfully won the army contract for Husqvarna, it so far has failed to impress off-road enthusiasts.

Not that the Automatic's simple four-speed gearbox doesn't work well; quite to the contrary, it's almost as slick-shifting as the complex automatic transmission in your car or van. You just crack the throttle open from a dead stop and the AXC moves

forward until it reaches the proper speed for an upshift into second gear. The very same thing happens as you accelerate through second and third. And as you speed up and slow down, the Automatic automatically positions itself in the correct gear so that when you open the throttle you have optimum rear-wheel power at your disposal.

Despite this apparent sophistication, though, previous Husky Automatics have not been popular, perhaps due to an identity conflict as much as anything else. The Autos have always been packed in a serious motocross chassis, yet they've been anything *but* serious motocross machines. They've lacked the sheer speed and power needed to run competitively, and worse yet, the gearbox often proved incapable of standing up to the day-to-day abuse of motocross. And previous versions weren't even fast enough to be effective cross-country racers.

But that was before the 420 AXC. Because with the added punch of a new 412cc motor and a host of beefed-up internals in a redesigned gearbox, Husqvarna hopes it has finally overcome the problems that have hurt the sales of Automatics.

Husky's salesmen are quick to point out, however, that even though the 420 AXC motor still resides in a high-zoot motocross chassis, the bike is *not* a motocrosser. The AXC designation stands for Automatic Cross County, a Husky-invented category that closely parallels the company's OR

(Off Road) series, but with an automatic transmission. The AXC *can* be used for motocross, but its designers see this bike as something meant mainly for hare-and-hound events, grands prix, maybe a bit of desert racing and, of course, fast trail riding. After all, that is precisely how the two previous automatic models were used; according to Husky's market research, only 20 percent of Automatics ever left knobby tire tracks on a motocross circuit.

Strangely enough, it is the AXC's MX-bred chassis that makes it so gratifying to ride in forms of high-speed off-roading other than motocross. It has the longest wheelbase and the greatest amount of front-wheel trail found on any dirt bike in modern history; and that, combined with state-of-the-art suspension, permits the AXC to glide over the worst imaginable terrain with unbelievable directional stability. There's probably nothing available for off-road use that will go as straight as easily as the AXC (except for some other Husky, of course).

The basis for the Automatic's chassis is a motocross frame identical to that used on 1980 CR models—except for the rear shocks and their mounting brackets on the swingarm. The shocks sit farther forward on the arm than before, thus making them more vertical while yielding a more progressive wheel rate. And the lower mounts are on the outside of the arm rather than on top of it. This allows the AXC's seat height to remain the same as the CR's

without using a banana swingarm. Husky's engineers don't believe in banana arms, since they feel that a bent piece of metal is inherently weaker than a straight one. So instead, they simply mounted the shocks outboard on the arm to achieve the same effect. And because the shocks are not parallel when viewed from the rear, Heim joints are used at all mounting points to let the shocks articulate as the swingarm moves up and down.

You may be unhappy to hear, however, that due to short supply from the Ohlins factory, only CR motocrossers will use that company's fantastic shocks in the 1981 model year. Enduro models will be fitted with Marzocchi equipment, and the Automatic will arrive with non-rebuildable, remote-reservoir Koni shocks.

But fear not; while the Konis may seem at first like a distant backward step from the Ohlins, they're not. Out on the track or through the woods, the AXC exhibits the same kind of plush, marshmallow-soft ride that has made late-model Huskys world-

famous. So despite having a less-pretentious name, the Konis are superb shocks that work in concert with the 1980-vintage CR-style front fork to give the AXC as competent a suspension as one is likely to encounter. The spring and damping rates both are quite low, and so allow the static 39-inch seat height to settle down to a more reasonable level with a rider aboard. The soft rates also let the bike soak up every hole and ripple so effectively that the rider is barely aware of their presence. And when you land from those mammoth sky-shot jumps, the rising-rate rear geometry and twin bump-stop rubbers prevent even a hint of bottoming.

If there's a glitch in the AXC's suspension program, it's in the front fork. Not in its shock-absorption qualities, for the Husky-built leading-axle fork has a well-deserved reputation for silky-smooth action, but in its lack of rigidity. The 35mm stanchion tubes are unusually small by today's foot-long-travel standards, so when the 3.00x21 Barum knobby meets berm or

rut, the front wheel is often deflected off in another direction from where the handlebar is trying to aim it.

Husky is aware of the problem, and larger fork tubes may even be in the offing for later in 1981. But for the time being, AXC riders will have to live with the skinny stanchions and tweaky front end. Truthfully, the problem isn't all that evident on the trails, which is where 80 percent of the Automatics will be used. There, the AXC devours holes and humps with barely a trace of front-end flex.

Only on the motocross track does the flexi-fork really pose any handling quirks. But even though the steering imprecision caused by the small tubes is small, its effects are sometimes exaggerated by the bike's stretched-out geometry. With a full five feet of wheelbase, 30.5 degrees of rake and almost six inches of trail, the Husky obviously was designed for high-speed stability—but at the great expense of low-speed agility. As its designers intended, the AXC wants to stay on the straight and ver-



PHOTOGRAPHY: GEORGE WEGNER

Continued

Cracking The Automatic Case: The Unshifter, Close-Up And Personal

- Automation, light weight and simplicity seldom share the same gearbox, but the AXC's transmission is an exception to the rule. It offers the advantages of automatic gear selection while remaining light in weight and simple to repair. And it all fits neatly inside of a regular Husqvarna-size gearbox case.

These attributes make the Husky sound almost perfect, and compared to most other no-shift designs it very nearly is. Unlike an automotive slushbox, for instance, the

Husky doesn't rely on hydraulic pressure for shifting or a torque converter for power delivery, so the gearbox can be simpler and more compact. The Husky also shares nothing with the Salisbury clutch that's been tried on everything from Rokon motorcycles to snowmobiles. That concept uses a wide V-belt to connect two pulleys whose effective diameters constantly change according to rpm/load demands, thus offering almost infinitely variable gear ratios.

Surprisingly, the AXC's gearbox has more in common with a moped than with anything else, for both use a centrifugal clutch to transmit power. The principle of these clutches is simple, involving an engine-driven inner hub that houses at least two spring-loaded flyweights, with the whole business stuffed inside of a drum-like outer hub that drives the rear wheel. At or near idle, the clutch is effectively in "neutral," since there is no contact between the inner and outer hubs. But as engine speed increases, inertia overcomes the spring tension and forces the weights to pivot outward. And as soon as the weights begin to drag on the outer hub, friction makes the hub turn, thereby driving the rear wheel. So as you open the throttle, the clutch engages gradually and the bike moves out.

Unlike the moped, though, the Husky is not limited to just one clutch and a single gear ratio; instead, it has four ratios, each with its own three-flyweight centrifugal clutch. Each clutch turns at a different rpm so that, with the help of either softer or stiffer springs, it engages at a different road speed from the others, thus providing the four separate ratios.

For the AXC to utilize those four ratios automatically, though, conventional transmission concepts had to be thrown to the winds. And in its place is a clever gearbox that makes extensive use of multiple concentric shafts—that is, shafts within shafts within other shafts. The mainshaft, for instance, is comprised of three side-by-side sets of flyweights (for second-, third- and fourth-gear clutch operation) that fit inside of one common outer clutch hub, and each set of weights is connected to its respective mainshaft gear through one of three hollow concentric shafts.

That same kind of shaft-within-a-shaft construction is found in the countershaft. What appears to be one compact four-gear shaft actually is four independent concentric gears. The gear on the left end of the cluster (fourth gear) is integral with the shaft itself, and it fits inside of the gear to its

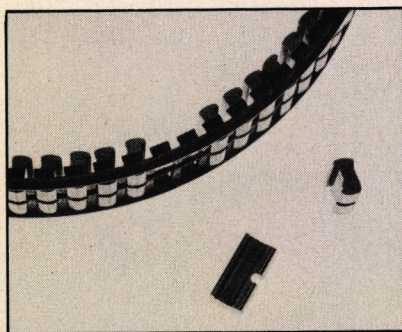
right (third), which then goes inside of the gear to its right (second), and all three fit inside of yet another gear (first) at the far right end of the cluster.

This leads us to the real key to the AXC's transmission, which is a series of small devices, called sprags, that allow shaft rotation in one direction only. From a distance, the sprags look like double-row caged needle bearings, and they even fit between each set of concentric countershaft gears as though they *were* bearings. But closer inspection reveals that each individual roller-like segment in these sprags actually is not cylindrical at all; instead, it has a shape that, when viewed from its side, is what Husqvarna calls a "dog bone," apparently because it's taller than it is wide and thicker at its extremities than in the middle. And the purpose of this shape is to cause the friction between any two of the concentric countershaft gears to force the segments to either "lie down" when the rotation between the gears is in one direction, or to "stand up" when it is in the other. When the segments lie down, one gear is free to rotate inside of the other, but only in one direction. Because when the direction is reversed, the segments stand up taller and get wedged between the bearing surfaces, effectively locking those adjacent gears together.

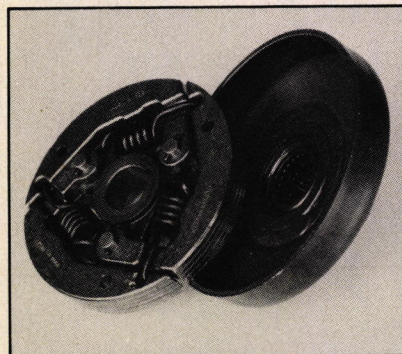
The sprags vary in size and number depending upon their location on the countershaft. A large-diameter one rides between first and second gears, two medium-size sprags are used between second and third, and there are three of a small diameter between third and fourth. And they're all installed so that if any gear on the countershaft is turned clockwise as viewed from the right side of the gearbox (the direction it normally is driven by the engine), every gear to its left cannot spin slower, and every gear to its right cannot spin faster.

If all of this talk about dog bones, flyweights and concentric shafts seems like gibberish, it makes better sense once you see how the gearbox shifts. As the AXC revs up from idle at a standstill, for example, the first-gear clutch (a separate centrifugal unit on the left end of the crankshaft) engages and delivers power through the primary gears, into the center shaft of the mainshaft and out to the far right-hand gear on that shaft. From there, the power transfers over to first gear at the far right end of the countershaft. And since the sprags lock-up every gear to the left of first gear, the four-piece countershaft acts as one solid shaft and transmits power to the final-drive sprocket bolted to its right-hand end.

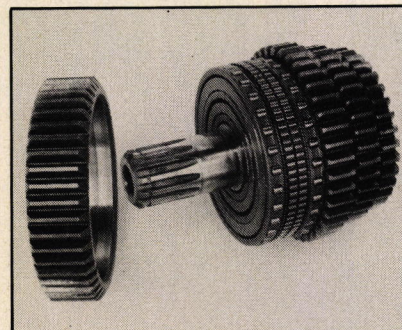
Throughout first-gear operation, however, the other three gears on the locked-up countershaft are spinning their opposing gears on the mainshaft; and since the ratios of those gears all are different from first gear's (and since all three mainshaft gears



Them bones, them bones, them dogbones
Husky's one-way street for horsepower.



Simple centrifugal clutch
Multiplied by four to complicate.



Pandora's gearbox
Shafts within shafts within gears.

can always spin independently of one another), all three sets of flyweights turn at different rates. The second-gear weights spin the fastest, third gear's weights the second-fastest and fourth's the slowest.

As soon as second gear's weights reach sufficient rpm for centrifugal force to overcome tension of their springs, the weights swing out and drag against the hub, engaging second gear. The right-hand gear (first) now just idles on the countershaft, wanting to spin more slowly than the rest of the shaft; and so the sprags allow it to do so. But the sprags also lock up everything on the countershaft to the left of second gear so that the final-drive sprocket now is driven at second-gear speeds.

This same process repeats itself twice more. Once the third-gear flyweights turn

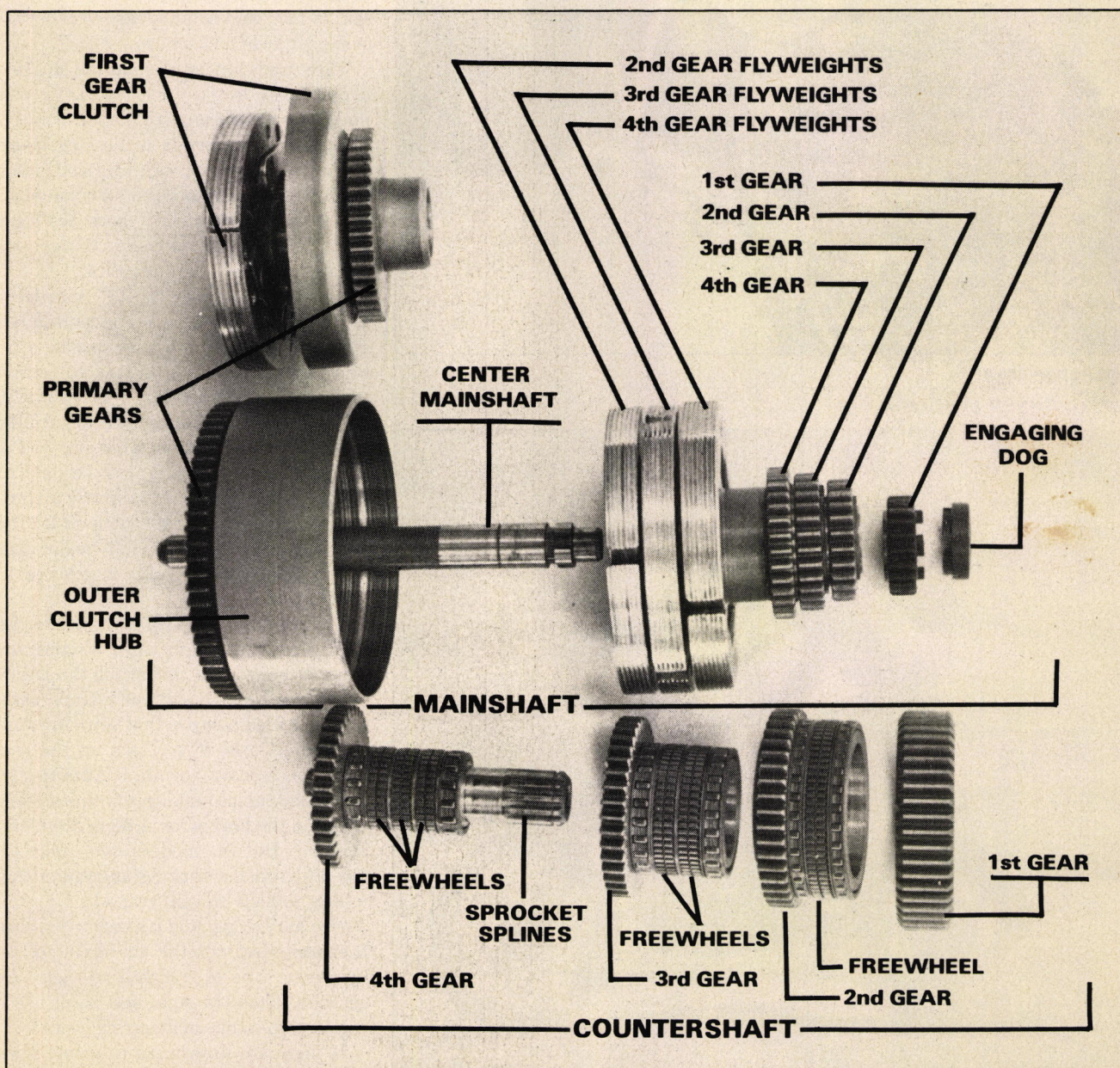
quickly enough to engage the hub, third gear on the mainshaft drives its mate on the countershaft. And the sprags force that gear to turn the countershaft while first and second gears freewheel. Finally, when fourth is engaged, only the left-hand countershaft gear (and its integral shaft) is powered, while the other three freewheel.

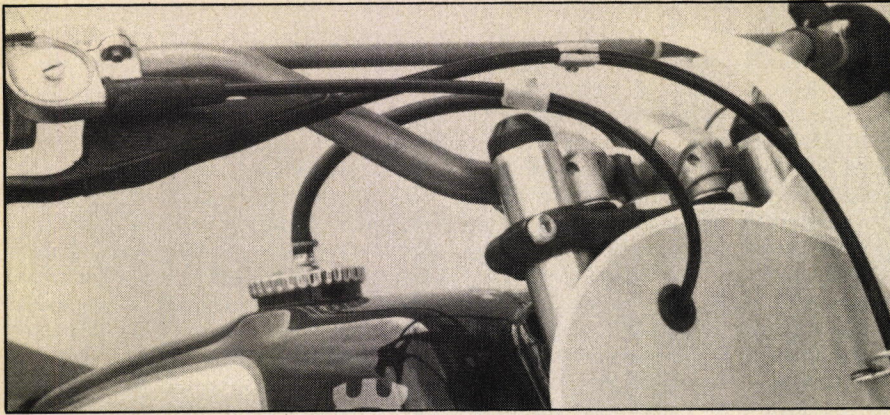
What's even more innovative about this system is that the crankshaft-mounted clutch is sensitive to engine rpm, and all of the mainshaft clutches are sensitive to rear-wheel rpm. So no matter what the situation, the gearbox always knows what gear it should be in. What's more, there is a complete range of optional stiffer springs to fit all of the clutches if there is a need to raise the point at which each gear engages. And so that the engine can be safely kickstarted

and revved without running off with its rider, there's an engaging dog at the right end of the mainshaft that renders the gearbox inoperable at the flick of a small lever atop the transmission case.

Slipping the Husky into "drive" is the end of your shifting duties as the gearbox takes over to make your life simpler. And while you might argue that in greatly simplifying your life the automatic has greatly complicated the gearbox, the fact is that it only *seems* that way. The AXC's transmission is complex only in concept, for it's deceptively simple in operation, especially when compared with other automatics. If you believe in shiftless motorcycles, you've got to believe that Husky has found the best approach to moto-automation, so far.

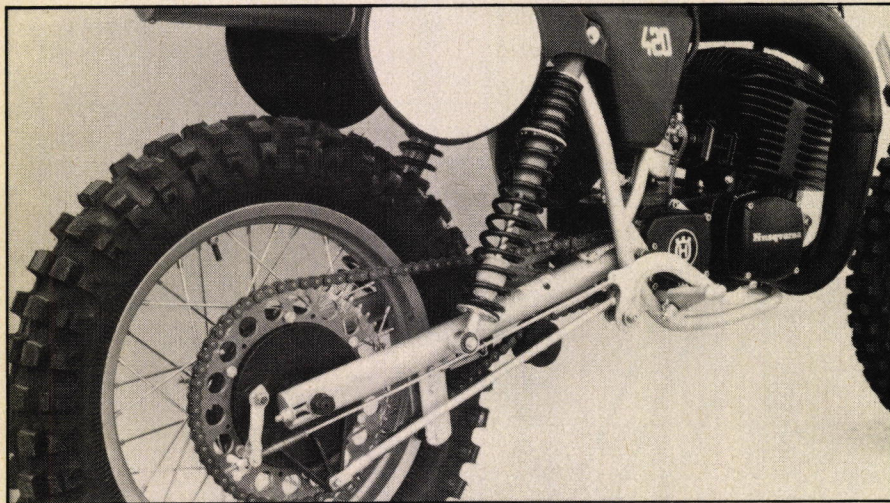
—David Dewhurst





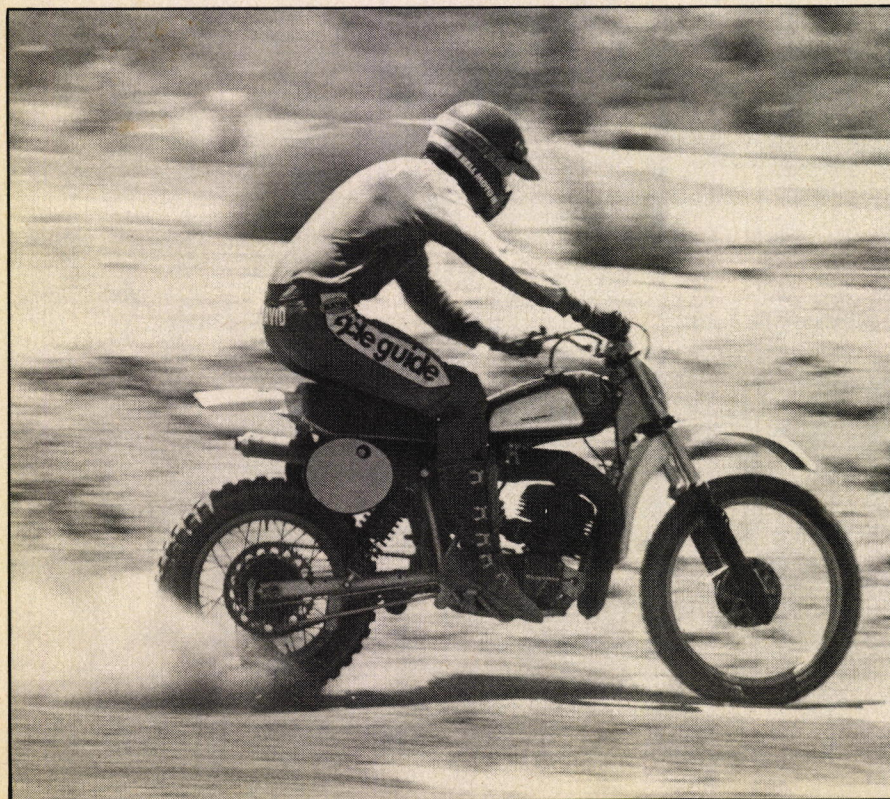
Gas cap takes a breather

Fuel in the tank and not on your pants.



A shocking new angle

Gallop to victory on a bowlegged Koni.



tical at all times, making it a handful to turn sharply. On a tight motocross track, the Husky can make you feel almost like a rank novice, for it resists being leaned over and shows an instant dislike for railing around shallow berms. The best solution is just to square off the turns, European-style, by either braking hard on the inside line or quickly ricocheting off of the berm. Even then, however, don't expect to win races by making good time through the tighter turns on your favorite track.

Those same slow steering habits are what make the Husky so predictable on the trail. And the higher the speeds the more the AXC likes it. On fast fireroads and sweeping turns the Auto just begs to be held wide open, as it tracks over cobby surfaces as though on rails. The machine is so totally confidence-inspiring that you can, in fact, find it quite easy to ride way over your head and get away with it.

Tight trails are not beyond the Husky's capabilities, but the slow steering can make woodsy maneuvering a lot of work. The slow geometry is a blessing when you're blasting *over* rockpiles and other trail obstacle courses, but it's a curse when you're trying to go *around* them. You'll get there, but not as quickly as you might on most other off-road motorcycles.

Besides, what makes the AXC manageable in the woods is not the chassis, but the gearbox. The geometry can make life a little awkward at times, but the automatic gear-shifting compensates handsomely. Without the need to change gears or play the clutch or think about what gear you're in, much more attention can be paid to steering and braking and throttle manipulation. It is only after you have ridden the Auto for a while that you fully realize just how much effort normally is devoted to shifting and clutching.

Quite simply, the AXC always is in the right gear at the right time, whether it's blasting along a fast trail at full throttle or crawling up a steep hill at a trials pace. And an added bonus is that you *can't* stall the engine, even if you lock up the rear wheel on a scary downhill. Admittedly, there is no engine braking, so you must rely solely on the brakes for slowing down and stopping. But the modern two-stroke offers little engine braking anyway, acting mostly to help prevent rear-wheel lockup during hard stops. And it's easy to produce the same effect with the Automatic simply by revving the engine slightly to engage the gearbox. Then the Auto acts more like a regular two-stroke in deterring lockup.

If there are drawbacks to going down hills on the AXC, you'll forget about them once you try a monstrous uphill, which is

where the Automatic *really* shines. If the hill is even remotely climbable, the Husky probably will crest it, simply because it automatically is always in the right gear. The bike doesn't seem to care how steep the hill is, for it can put the first tire tracks atop many a steep climb that will defeat other bikes. And even if your forward motion stops, it's easy enough to dismount and walk the bike to the top.

In just about every other trail-riding situation, as well, the Automatic proves a great asset. Which goes to show that Husqvarna's designers were correct when they claimed that the AXC really could help the average rider. They also were right when they said that the bike isn't a motocrosser, even from an engine standpoint. Off the start line it is impossible, of course, to lose any time due to missed or miscalculated shifts; but even with the extra 22cc, the AXC is no quicker than a manual-shift 390 Husky—which isn't the fastest out of the starting gate. And where the AXC really loses time is in the turns, for not only is there the slow steering to contend with, the absence of engine braking makes it more difficult to avoid overrunning many turns. You must depend entirely on wheel braking, and that's something that requires a lot of practice before you can enter turns as consistently as with engine braking.

What's more, there is a slight lag between opening the throttle and when the motorcycle accelerates. That's due to the time it takes for the centrifugal clutches to

engage. There also is a general lack of horsepower that makes the Husky feel like a 125 alongside, say, a 465 Yamaha. Much of that is an illusion caused by the AXC's smooth delivery of easy-to-use power, but no matter how you slice it, the bike is too slow to be competitive on an MX track.

Husky has a partial solution to the MX problem lying in its parts bins in the form of optional springs for all of the centrifugal bob weights. Stronger springs allow the motor to rev higher before it upshifts, which helps considerably on the track without detracting from the trail-riding performance. But even when that is done, the Husky will not be a serious threat.

At least this time around, though, no one has touted the Automatic as a for-real motocrosser. The focus on its intended purpose is still a little fuzzy around the edges, but it's plain to see that when used as an all-around off-road funbike, the AXC offers a lot for the seasoned veteran as well as for the inexperienced rookie.

Did the Automatic concept prove to us that shiftless motorcycles are essential? Absolutely not. But it did demonstrate that an automatic gearbox can be quite useful, often advantageous, and even reliable when subjected to the rigors of motocross—although our test bike did brake one of its clutch springs on its very first ride. So it's fair to say that the AXC finally proved—to us, at least—that automatic gearboxes do have a place in the dirt.

Now all it has to do is convince you. •



Ride Review

• Hey, I didn't just fall off of the turnip truck. I mean, I know that it's uncool to ride an automatic-transmissioned motorcycle, just as it was uncool 10 or 15 years ago to drive an automatic car. And riding an automatic dirt bike, for God's sake, is just asking to be ridiculed by the *real* dirt guys.

Okay, so there's no denying that the AXC scales mammoth hills like an eager mountain goat, and the aggravation it can save by always being in the right gear is sizable, indeed. But there are times when I don't *want* to be in "the right gear." One is when I'm trying to tiptoe up a slick but not-too-steep grade that is best attacked a gear or two higher than normal on a manual-shift bike. Another is when I'm picking, trials-like, through a rocky stream and the AXC wants to be in one gear but *I* want it to be in another.

These and other problems unique to the Automatic can, with time and practice, be overcome. But every time I ask myself what I stand to gain as opposed to what I'll probably lose, I erase the AXC from my dirt-bike want list.

I admire Husqvarna for sticking with the automatic concept, and I even have to admit that it works much better than I thought possible. But it's just not my kind of bike. After all, I have an image to protect. Don't I?

—Paul Dean

• This isn't a motorcycle. This is an android. How else can you describe a bike that does your thinking for you? Although I'll confess that when there's some nasty obstacle on the trail ahead, I'm relieved that I'm spared the coordination of clutch and shifter, forestalling the likelihood of a mistake that would force me into another duel with the Husky's mile-high kickstarter. When it comes to trail riding, the AXC lets me concentrate on the terrain instead of the motorcycle. I like that a lot.

I'm less happy with the robotic Husky when it's time to go fast. Freewheeling on the downside of hills spooks me and so does throttle lag. I'm also really disoriented when I have to negotiate tight corners on motocross tracks. The Husky doesn't settle into its suspension, dragging the rear wheel like a conventional bike. Instead it bobs back and forth on its long legs, soaking up the bumps but feeling unwieldy at the same time. I don't like that.

I guess you're going to have to mark me as undecided in this particular poll. When it comes to riding the trail, the Swede-o-matic might be an all-time favorite. There are times when I like to let the bike do its job while I do mine. But whenever speed is called for, I think I prefer the stone-age stick-shift, thanks all the same.

—Michael Jordan

Continued

Husqvarna 420 AXC Automatic

SPECIFICATIONS:

Importer: Husqvarna Motorcycle Co., Inc.
4925 Mercury St.
San Diego, California 92111

CATEGORY: trail

SUGGESTED RETAIL PRICE: \$2495

ENGINE

Type two-stroke vertical single
Port / valve arrangement one reed-valve-controlled
intake, two main transfers,
two booster transfers, one exhaust
Bore and stroke 86.0mm x 71.0mm
Displacement 412cc
Compression ratio (uncorrected) 11.5:1
Carburetion one 38mm Mikuni slide / needle
Air filter washable oiled foam element
Lubrication pre-mixed fuel and oil
Starting system kick, in neutral only
Ignition Motoplat internal rotor CDI
Charging system none

DRIVETRAIN

Primary drive straight-cut
Primary drive ratio 1.560:1
Clutch wet, centrifugal
Final drive type #520 chain (%-in. pitch,
1/4-in. width)

Gear	Internal gear ratio	Overall gear ratio	MPH per 1000 RPM
I	2.300	17.30	4.3
II	1.708	12.85	5.8
III	1.357	10.21	7.3
IV	1.129	8.49	8.8

SUSPENSION/WHEEL TRAVEL, IN.

Front air-spring 35mm stanchion tube
diameter / 11.5 in. (292mm)
Rear Koni, 4-way adjustable spring
preload / 11.9 in. (302mm)

BRAKES

Front drum, single-leading shoe
Rear drum, single-leading shoe, rod-operated

TIRES

Front 3.00 x 21 Barum Motocross Special
Rear 140/90 x 17 Barum Cross Special

DIMENSIONS AND CAPACITIES

Weight 239 lbs. (108kg)
Weight distribution 45.6% front, 54.4% rear
Wheelbase 58.7 to 60.1 in. (149 to 153cm)
Seat height 38.6 in. (965mm)
Handlebar width 33.2 in. (845mm)
Footpeg height 16.0 in. (406mm)
Ground clearance 13.0 in. (330mm), at frame cradle
Steering head angle 30.5 degrees from vertical
Front wheel trail 5.98 in. (152mm)
Frame tubular chromoly steel, single front downtube
Fuel tank aluminum, 2.11 gal. (8.0l)
Instrumentation none

PERFORMANCE

Top speed (calculated) 65 mph (105 kph)

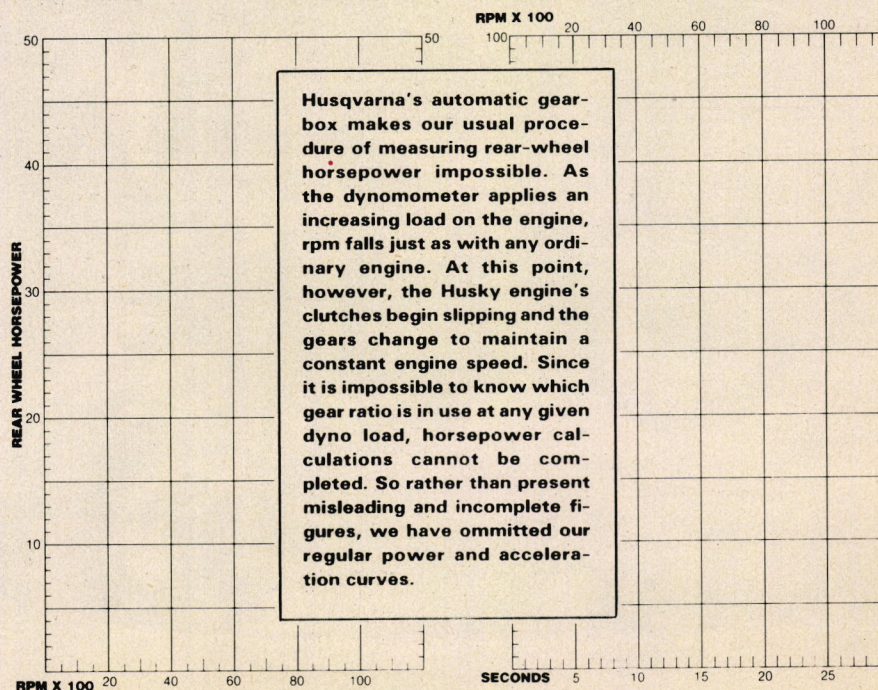
All weights and measurements are taken with machine
unladen and fuel tank empty.



COMPARATIVE TEST DATA:

Make & Model	Horsepower	Wheel Travel Front/Rear, in.	Weight (fuel tank empty), lb.	Weight bias Front/Rear percent	Transmission, number of speeds
Husqvarna 420AXC	NA	11.5/11.9	239	45.6/54.4	4
Yamaha YZ465	39.4	11.2/11.8	228	46.5/53.5	5
Kawasaki KX420	34.0	11.0/11.3	250	46.4/53.6	5
Maico 450M1	37.0	12.3/12.0	236	46.6/53.4	5
Suzuki RM400N	28.1	11.2/11.8	229	46.3/53.7	5
Can-Am MX-6 400	38.3	11.5/10.8	233	45.5/54.5	5

PERFORMANCE:



PRODUCT EVALUATION:

Hat Trap

Sure relief for the agony of dangling D-rings.

• The first time I saw an empty pair of D-rings dangling at the side of a motorcycle was disillusioning. They were unconnected to anything save a sliced-up chin strap. That was also the last time I seriously considered leaving my helmet locked up to anything other than the inside of my house. Until now.

I've recanted on the helmet lock question, but it has nothing to do with a renewed faith in my fellow man or some secret desire to be shed of my old helmet. It's because of a new idea in helmet locks called the Hat Trap. What makes it different from other locks of my acquaintance is that it doesn't simply secure one part—like the D-rings or chin piece—of a helmet. It literally *surrounds* the helmet with a flexible steel cage, then it secures the cage to a motorcycle or something even less portable.

So far, the description could apply to some ponderous, ungainly device that's too heavy to lug around; something that would probably inflict deep scars to the surface of a custom-painted helmet. Not so. The steel that covers your helmet is in the form of nearly 23 feet of wire that's joined at 26 points, producing sort of an open-ended basket. What keeps the Hat Trap from scratching its contents is that the basket is lined with soft nylon. The outside is covered in nylon as well, a waterproof material that's considerably stouter than the lining. The result of this fabric/metal sandwich is a small duffel bag that guards your helmet (and riding gloves and jacket if you pack it carefully) with strands of cold steel. And that further rolls up into a small, unobtrusive Velcro-sealed bundle when you're traveling.

More steel is used to keep the Hat Trap from traveling after you've stopped. A vinyl-coated wire passes through loops at the open end of the basket; when the wire is pulled tight, the trap is sprung—with your helmet on the safe side. The wire is then looped through a wheel or around some-

thing stationary. After you've adjusted the friction lock on the wire to remove slack and clicked the included five-pin padlock in place, the Hat Trap is set for the duration. It's going nowhere until either you unlock it or some thoroughly obsessive thief works on it awhile with bolt cutters.

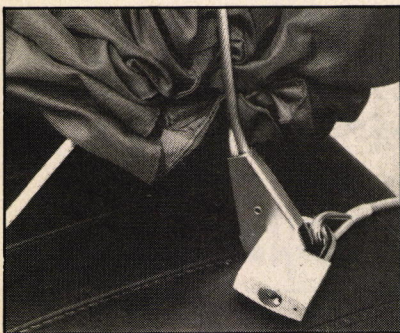
At \$39.95, the Hat Trap is considerably pricier than most other helmet locks. That might be enough to discount it in your book, but not in mine. The way I see it, the Hat Trap's price is a whole lot cheaper than the experience of finding D-rings dangling at the side of my bike. The Hat Trap can be ordered from S.P.M., 4139 Via Marina #302, Marina del Rey, California 90291.

—Larry Works

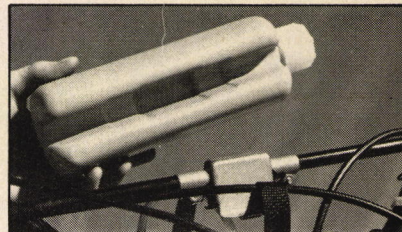


Hat Trap rolls to compact lump

And unfolds to check your helmet.

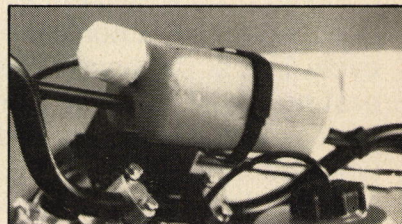


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Accelerate With The TISON Power!

What It Is And How It Works

An important modern concept of engine technology is to improve combustion by creating a more efficient air-fuel mixture. The Japanese automotive and motorcycle industries have proven that generating swirls in the air-fuel mixture increases fuel economy and horsepower, while decreasing polluting exhausts.

Sekon International has found that the best mixing procedure is to swirl the air-fuel mixture partially in different directions. The Swarup, which was introduced to the U.S. market several months ago, utilizes this procedure by generating swirls in the inlet manifold.

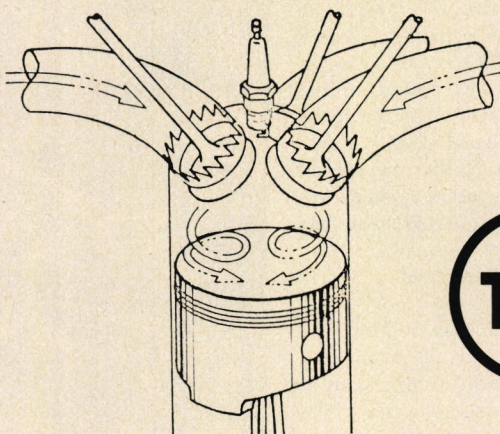
Another development from Sekon, the TISON Engine (Twin-Inlet Swirl Ong Engine), generates the same multiple swirls in the combustion chamber, using two static-swirl mixers placed under the valve sheets of a twin-inlet valve engine. Each static mixer will generate a single swirl. Both mixers combined form twin-inlet swirls rotating in opposite directions. Under the high temperature and high pressure conditions in the combustion

chamber, the multiple swirls will produce a highly vaporized air-fuel mixture. The multiple swirls, rotating across the spark plug, also cause the transfer of flame to rapidly burn the air-fuel mixture, forming high and smooth power output.

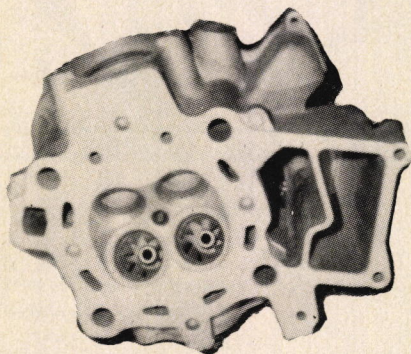
TISON—A New Decade

Sekon International announces its success in testing its first experimental TISON Engine using a Honda CX 500. With an increase of 20-30% in power, the fuel economy increases 20-30%. Overall performance also significantly improves.

The Japanese have proven that the stronger a turbulence is generated in the combustion chamber, the more the performance is improved. The multiple swirl TISON Engine, with its arrangement of static fins, is presently the best designed engine for increasing the efficiency of engines.



Patent Pending



Sekon International can transform any four-stroke engine into a TISON Engine. Please consult your dealer and contact us before you send in your cylinder head. All racers are welcome to share or compete against the TISON power.



"SEKON, Second to None!"

Do you know that while a smooth bore carburetor and the SWARUP both increase the power of your bike, a smooth bore carburetor increases fuel consumption and the SWARUP decreases it?

Do you know that while using the Swarup, if you step up the main jet as a smooth bore carburetor does, not only will you have more power than a smooth bore carburetor, but you still will be consuming the same fuel as the stock carb?

Do you know that the smooth bore carburetor costs nearly \$300 for a four cylinder motorcycle, while the SWARUP is less than one quarter of the price? You figure it out.

Do you know that we are selling more SWARUPs than smooth bore carburetors in the Japanese after market? (By the way, you are aware of who makes the bikes?)

We do not disagree with the function of a smooth bore carburetor, we've just found a better and easier way!

A Glimpse of the Future



We Challenge Smooth Bore Carburetors for Power!

The SWARUP is the best cost-performance device on the market today and is the only device which is capable of burning a wide range of air-fuel mixture in your engine. This gives you a wider play between power and fuel consumption!

By simple installation of the SWARUP, you get an increase of more than 10% in power with better fuel economy. A further increase in power can be made by stepping up the main jet. If you step down the main jet, a leaner air-fuel mixture for better fuel economy can be obtained while maintaining stock power. Again, the SWARUP is the only device to give you this wide range burning.

When you install a high cam shaft, a big bore, or a low resistant air-filter, usually you will have a hard time getting a good setting of your carburetor. Because of the excellent performance of SWARUP, a smooth setting will be very simple, even if you are not a professional in installing high performance products.

Finally, the E.P.A. standard for all 1980 models will decrease their performance. The SWARUP can burn an even leaner air-fuel mixture than that required standard. That means that it can increase the performance for the latest and future models or even any racer that you build. The SWARUP — A Glimpse of the Future!



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Twin Carb \$38.95

Triple Carb ... \$58.95

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Six Carb \$88.95



"SEKON, Second to None!"

MINITEST:

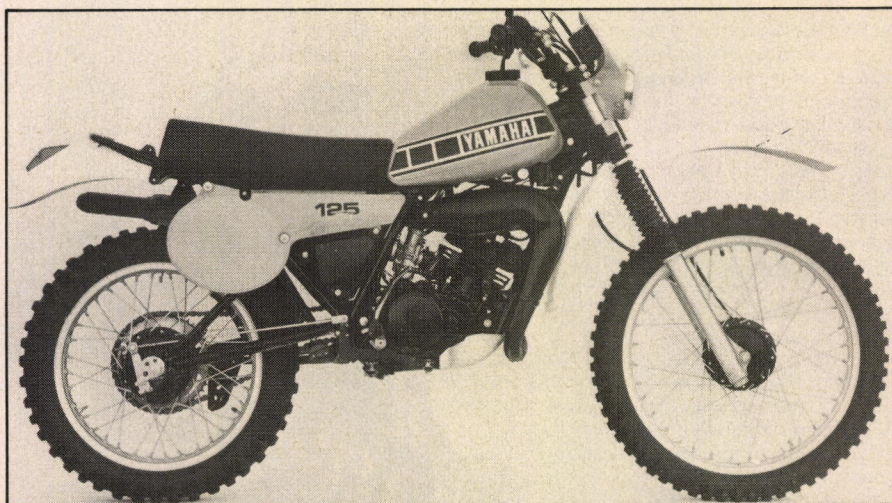
Yamaha IT125G

The little bike that could.

• Even in the motorcycle world, good things come in small packages. And when it comes to bikes, they don't come any better or any smaller than Yamaha's diminutive IT125G. You might think the IT designation suggests that a serious enduro bike lies underneath that nice blue plastic, but as Yamaha is quick to point out, this little bike is not for serious racing. It is just for fun.

Actually, the guys in the Yamaha showrooms tend to undersell the littlest IT by apologizing for its lack of trick bits and identifying it as "something for the wife and kids." And sure enough, the IT125 does not have an aluminum swingarm or a 24-way adjustable shock, and its suspension is fairly short. And my wife liked the fact that the seat height is 34 inches, as did the kid next door. And with only a 125cc engine to control, they both thought they could manage the little IT.

Yamaha might have developed this bike to get the whole family into the dirt, but it forgot to add *you* to the list of potential riders. Because from the first time you try it on for size, you'll be hooked. The engine might not pump your adrenaline like your YZ465 does, and maybe the suspension isn't as silky smooth as your Husky's, but this little Yamaha's charm is irresistible. Basically, what we have here is a



cross between last year's YZ125, an old IT175 and a Yamaha playdure.

Much of the bike's appeal comes from the tiny engine. The cases are black, but the motor has a heart of gold—old gold, actually, since the engine's heritage can be traced back to the 1977 YZ125 motocrosser. It uses many of the very same parts as the 1979 YZ125 engine, for the crankcases, barrel and head are just as they were on the F-model motocrosser. Port layout is just the same too, but the timing has been tamed to make the engine mild-mannered.

The revised porting and restrictive silencer really have calmed the old radical racer, making it as docile as a family pet. Just about anybody can learn to wobble in the whoops and yet attain astonishing speeds, thanks to the six-speed gearbox. But as we were saying, the engine has enough in reserve to please you, too. The IT will wheelie merrily through the first two gears and put a respectable show on the speedometer with resettable tripmeter. The only difference is the fact that you're opening the throttle a little bit wider.

With this kind of encouragement, it is never long until you find yourself using the IT125 to explore the trails on the other side of the creek (substitute your own excuse) while your family

looks after the big YZ or IT. Even as you cross the creek, the tiny IT will amaze you, diving deep into the stream without missing a beat.

As you emerge on the far side of the creek into terrain you thought reserved for WR Huskys and KTM 420s, the IT will continue to please you. It won't scream up hills at tree-blurring speed, the rear tire smoking with wheelspin, but it also won't quit before you've reached the top. The motor just about refuses to give in, and even when it does, the clutch is light and progressive enough to give you new hope of success. As a result, the IT will climb most anything the big bikes can.

The only things that really limit your progress with this bike are the suspension and tires. The tires are nothing special, and although the chassis is the same as last year's YZ, the IT doesn't share the same suspension. The steel swingarm has a leverage ratio different from the F-model YZ's, and the adjustable YZ Monoshock has given way to a steel unit that

YAMAHA IT125G

Importer: Yamaha Motor Corporation, U.S.
6555 Katella Avenue
Cypress, California 90630

Category	enduro
Suggested retail price	\$1169
Engine type	two-stroke vertical single
Port arrangement	one reed-valve-controlled inlet, four main transfers, one booster transfer, one exhaust
Bore and stroke	56.0mm x 50.0mm
Displacement	123cc
Carburetion	one 30mm Mikuni slide/needle
Gearbox	6-speed
Final drive ratio	3.833:1
Front fork / wheel travel	32mm stanchion tube diameter / 6.7 in. (170mm)
Rear shock / wheel travel	Adjustable preload monoshock / 8.0 in. (203mm)
Wheelbase	53.2 to 54.4 in. (135 to 138cm)
Seat height	33.7 in. (857mm)
Weight	205 lbs. (93kg)
Top speed (calculated)	64 mph (103 kph)

has only spring preload adjustment. The fork, too, is a low-tech motocross design with short travel and soft damping—perfectly appropriate for a family-style bike but not up to par for more aggressive fun. Both ends will clang and bang if you treat them as you would YZ465 pieces, so it's best to keep yourself in control when you're in the saddle.

When it comes right down to it, the IT's size is really an asset. The short wheelbase helps it change direction quickly, while the low seat height gives you the confidence to hurl the bike into corners at speeds you'd never consider on a bigger bike. This is a bike that you can really toss around, and because it is built to IT standards, you don't have to worry about breaking it in half along the way. The IT125G might be one of the best dirt bikes of 1980 for just these reasons, and surely it's one of the best bargains.

The Yamaha people are right. This is just the sort of bike to get your family and friends into the dirt, and at a cost that won't force you to use secondhand parts in your YZ465. But you might consider getting one for yourself—just to keep an eye on the family you understand, make sure they don't get in any trouble. Because once you've ridden it, you won't be able to let it alone.

—David Dewhurst

MINITEST:

Yamaha IT175G

The single shock is the motor.

• Serious enduro riders are likely to want something a little more exotic than the IT125G. That's where the IT175G comes in. The G-model 175 enjoys the latest in suspension technology, not to mention enduro goodies like quick-detach wheels, a large tool bag and a resettable tripmeter—everything the serious enduro rider could possibly want.

Well, almost everything. The IT175G looks the part of a serious enduro bike, but it is not. In fact, the lowly IT125 actually is superior.

The 175's chassis has nothing to do with this shocking state of affairs, though. The IT has a frame just like that of the YZ125G making the IT strong and rigid. The remote-reservoir Monoshock comes from the G-model YZ as well, although it has softer damping than the motocross model. The shorter F-model YZ125 fork is used, which gives the bike slightly steeper head angle for slow speed woods riding, and overall the suspension combination works superbly whether you're in the woods or on a motocross track.

Quick reactions on the IT's part do not come at the expense of straightline stability, either, for the bike tracks precisely and confidently on fast trails. Again, the supple suspension plays a role by keeping the wheels on the ground in most situations. And because the Monoshock can be adjusted to 24 damping settings, whatever problems you might encounter in this respect can be solved readily.

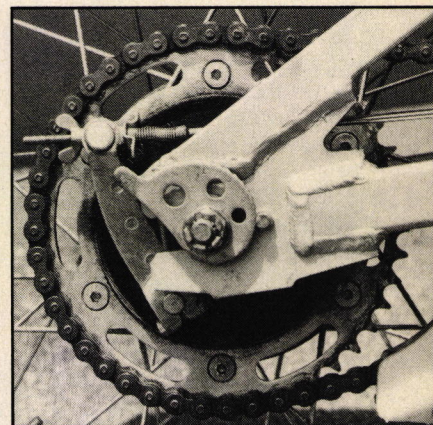
But no matter how perfect the suspension might be, it cannot disguise this weakness of the 175's motor. Not only does it produce nothing spectacular in the way of peak power, it totally lacks usable bottom-end power as well. If you let the exhaust note dip below a high-pitched scream, the horsepower instantly disappears. Because the engine is quite willing to rev to its 8000 rpm redline, you can live with this sort of performance for a while, but if you're in the woods, you're in big trouble. On ordinary hills the IT175 runs out of breath before the IT125, and even downshifting and frantic clutch work rarely are enough to save the day.

The IT's engine is based upon the G-model 125cc motocross engine, but that should not lead to the 175's paucity of punch. The motocross engine is light and compact, two essentials for enduro work, but what's more, it has both substantial peak power and acceptable bottom-end. Somehow the 10mm-larger bore and different transfer ports of the IT175 conversion have stolen the spirit from this engine. The only remedy is a YZ airbox and a silencer from the IT175F, which help the motor breathe a bit better and recover some power. And even with them, the IT175G rider will have to ride his motorcycle hard to stay on his enduro minute,

using every ounce of top speed within the wide-ratio gearbox to keep up.

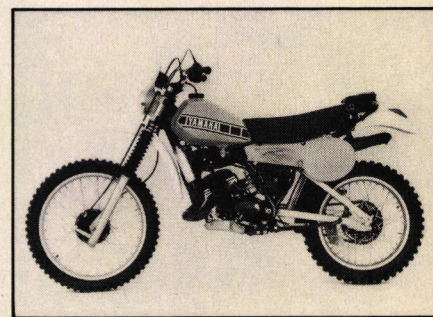
At first glance, the IT175G indeed has the markings of a serious enduro bike, especially compared to the mundane IT125. Yet because of an engine that is unsuitable for off-road work, the entire package fails to measure up to even the 125's standard. And that's enough to make the IT175G your second choice when it comes to small blue enduro bikes.

—David Dewhurst



Quick-detach rear wheel

Removal is a one-wrench affair.



YAMAHA IT175G

Importer: Yamaha Motor Corporation U.S.
6555 Katella Avenue
Cypress, California 90630

Category	enduro
Suggested retail price	\$1399
Engine type	two-stroke vertical single
Port arrangement	one reed-valve controlled inlet, four main transfers, one booster transfer, one exhaust
Bore and stroke	66.0mm x 50.0mm
Displacement	171cc
Carburetion	one 34mm Mikuni slide/needle
Gearbox	6-speed
Final drive ratio	3.667:1
Front fork / wheel travel	36mm stanchion tube diameter / 9.2 in. (234mm)
Rear shocks / wheel travel	15mm preload adj., 25 position adj. damping / 8.5 in. (216mm)
Wheelbase	55.1 to 56.2 in. (140 to 143cm)
Seat height	34.3 in. (870mm)
Weight	211 lbs. (96kg)
Top speed (calculated)	65 mph (104 kph)

THE COMMUTER'S SHOCK

As fuel prices continue to skyrocket and freeway congestion increases, more and more Americans are turning to the popular **HONDA HAWK** for commuting.

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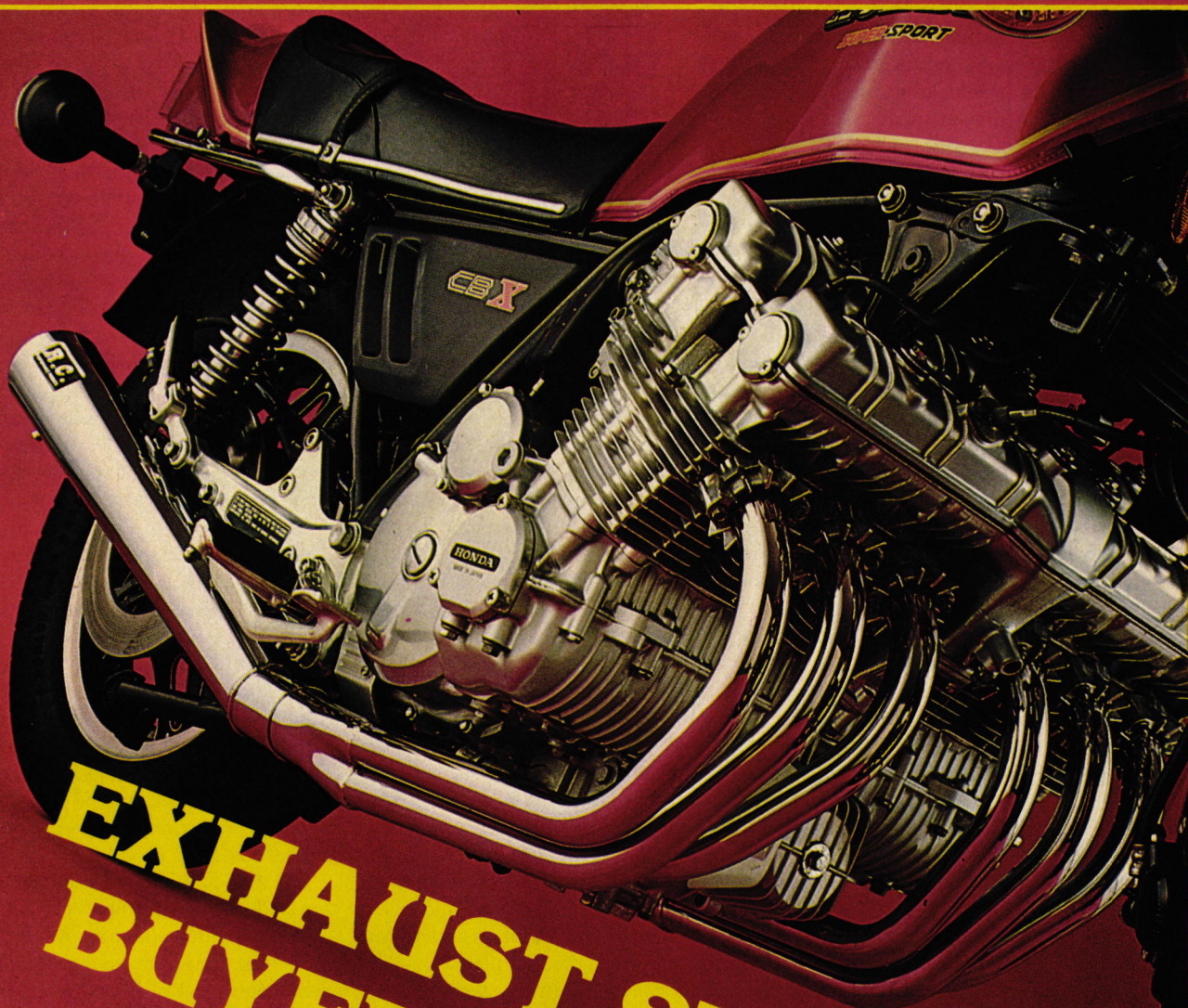
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**What they fit, who makes them,
how they're made what they cost, and how to get them!**

Exhaust

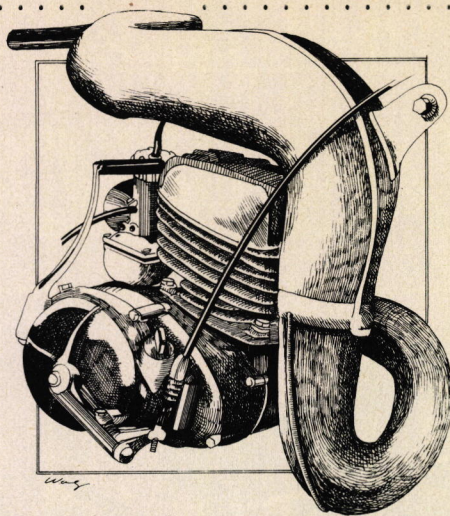
Systems can alter your entire outlook on the way your motorcycle runs. Let's face it: Except for a good set of pipes, you won't find many real-life accessories that can live up to the extravagant bolt-on-more-horsepower claims made by so many aftermarket manufacturers. The fact is, short of a wholesale re-engineering of engine internals, few items out there in dealership-land can reap tangible performance benefits as quickly and cost-effectively as the exhaust systems you'll find displayed on these pages.

The reasons why are basic: The secret to finding more performance is to improve an engine's flow of fuel and air. If you can do that, it can't help but produce more horsepower. And that's why a well-designed set of headers and pipes can make such a difference. They dispose of exhaust gases so efficiently that they actually help suck more fuel-air mixture into the cylinders for the next combustion cycle. And this not only affects the horsepower, but economy as well. A denser charge in the cylinder produces a stronger explosion; and since the motor is making more horses-per-revs than before, it can actually save gas—if you mind your throttle.

"The performance equation," says George Huebner, General Manager at R.C. Engineering, "is in 10-percent increments. The first 10 percent—the pipes—costs from \$100–200. Next comes head work, cams, valves and so on, for \$300–500. Pistons, a rebore, a crank, carbs—a new engine, really—can cost upwards of a grand. So when a guy's looking for a bit more juice but doesn't really want to go Pro Stockin', he goes for pipes before anything else."

Indeed, going faster is the reason behind many aftermarket pipe purchases, no matter how much the Feds characterize riders who modify their exhausts as noise-niks. A five-state dealer survey conducted by the AMA, and published by the Motorcycle Industry Council last June, indicates that a desire for increased performance is involved in about 42 percent of retail exhaust replacement sales. The dealers further responded that only about 13 percent of their customers were seeking a louder sound, a figure that corresponds closely with Environmental Protection Agency information—and you can bet they were loath to disclose it—that excessive motorcycle noise is caused by a mere 12 percent of bike users.

Interestingly enough, cost is the primary reason cited by both dealers and aftermarket manufacturers for the replacement of a worn-out or damaged OEM exhaust.



"We have two basic customers," says Darryl Bassani, founder and President of Bassani Manufacturing: "Guys who want more power, and guys who want to save a few bucks." A stock set of mufflers, pipes and mounting hardware for a standard Japanese four-cylinder Superbike will burn a customer's checkbook for \$250 or more, not including dealer installation. A 4-into-1 aftermarket setup—which saves weight, gives a custom look, and might improve power and/or economy—can be had for less than \$200, plus the price of a six-pack for the do-it-yourself mounting job.

So why doesn't everyone modify his exhaust? Obviously, not everyone is ready for the street-racer image most super-trick collector systems impart. And, too, there are cautions involved in altering any part of a stock motorcycle, especially those pieces that affect OEM engine performance. Finally—and this is more a constraint for the manufacturer than the customer at present—the Feds are mightily concerned about accessories that change the standard emissions and noise levels to which the OEM product was made to comply in the first place.

In this Special Edition, however, we aren't going to get too concerned with the self-imagery aspects of any exhaust system, or with its impact on Big Brotherism. Instead we're simply going to give you the facts; the choice is yours. Not that you'll find every pipe in the world listed here, since that would require more space than this entire issue. So, what we've done is list the major exhaust manufacturers—more than 90 percent of the available market—and offer photos and descriptions of their representative products.

For various reasons, the business thrust of most companies listed here tends to favor four-stroke street systems; but most of them also offer pipes for four-stroke dirt singles, and many have stingers and spark-arresting mufflers for two-, three- and even four-wheel two-stroke dirt tiddlers. We've

included them all, though, so whether your bike bent is Baja, Brands Hatch or Beech Bend, we think we have your exhaust needs covered. Of special note here is the response we received from manufacturers of expansion chambers for the thought-to-be-extinct two-stroke triples and twins: Apparently, reports of the demise of those motorcycles have been greatly exaggerated. Economics being what they are these days, many of you out there seem to be dusting off H2 Kawis and GT Suzys and ordering new pipes like there's really going to be a tomorrow. So those kinds of pipes are also listed in our Special Edition.

A few precautions, however, must be recounted before you peruse the pictures.

The Federal standards for emissions, for instance, are a real can of worms as they apply—or don't apply—to aftermarket exhaust systems. Rejetting a carburetor to compensate for increased air flow, though advisable in mechanical terms even if it's just to return the fuel/air mixture to "stock," will most likely render your motorcycle in violation of the Clean Air Act. This problem with rejetting is not that it's illegal in itself, but that any change in the stock configuration as regards emissions is against the law.

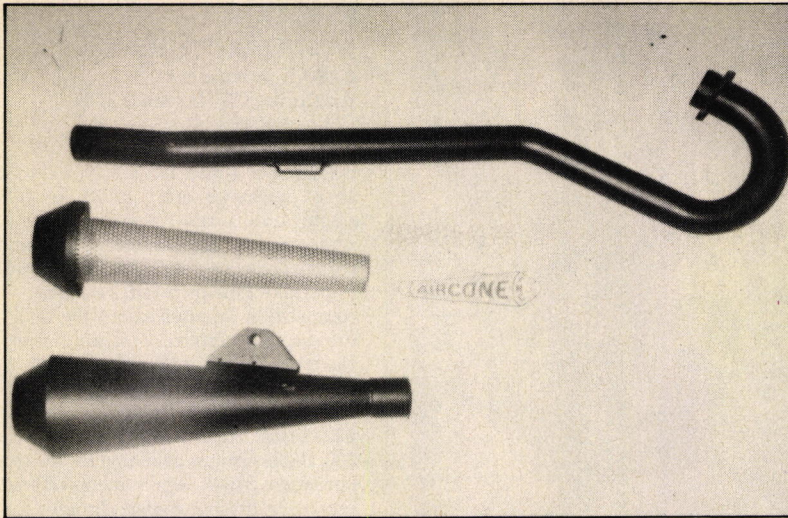
Sound is another consideration. There will not be a Federal noise law until at least model-year 1982, but you should be aware of any state or local statutes (and enforcement habits thereof) that apply to your situation. Constabularies are capricious: What's too loud in Oshkosh may be okay in Orlando, but burying the tach needle in second gear is a lousy way to find out if a cop has a hearing problem.

The nuts and bolts of the exhaust-system trade are straightforward. Make sure a system provides adequate ground clearance or won't ignite your saddlebags or roast a passenger's calves. Access to the oil filter and drain plug are obvious pluses, as is the ability to retain the side- and center-stands. All dirt systems should have a Forestry-approved spark arrestor as part of the package, or at least as an option. Buy it, if optional. And finally, inquire about warranties; the good guys have them in various forms, and will stand behind their workmanship.

What's next is to flip the page and then try to control your own 2-into-1 breathing system as you flow through this exhaustive exhaust guide. Because unless you happen to own one of motorcycling's rare orphans, there's bound to be a system in here somewhere that'll turn your timid two-wheeler into something that looks, sounds, feels—and with a little luck, even runs—like a bona fide fire-breather.

Continued

1



1

AIRCONE INC.

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Two-stroke systems for singles and twins, specializing in Yamahas. Mostly dirt systems, but RD350/400 expanding headpipes with a claimed ultra-smooth powerband are available for \$140. Yamaha TT250 pipe pictured. Features: repackable silenced megaphone, tucks in close, mounts on stock bracket, claimed increase in midrange and top-end. Yamaha Tri-Moto system available for \$79.95; plus Forestry-approved spark arrestors are \$94.95.

2

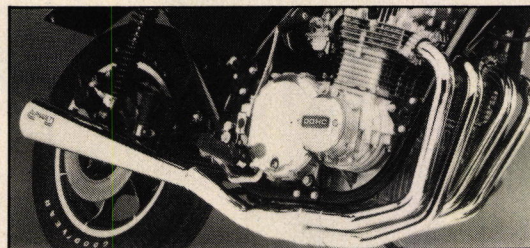
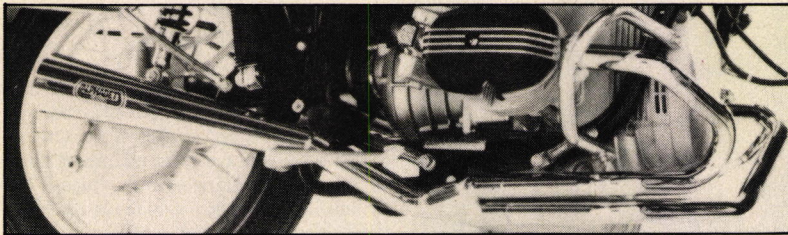
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(714) 897-3561

Price: Catalog \$3.00

Street systems for BMW, Harley-Davidson, most Japanese (singles through sixes), Moto Guzzi, Norton and Triumph. Some dirt single four-stroke pipes, and replacement mufflers for most street bikes available. Kawasaki 4-into-1, pictured, features equal-length headers for balanced back-pressure, megaphone muffler, high-quality chrome on 18-gauge steel, easy access to oil filter, retention of sidestand only, retail price \$202.95. BMW 2-into-1 fits all models 1970-78, retains both stands, claimed performance boost above 4000 rpm, retail price \$149.95.

2



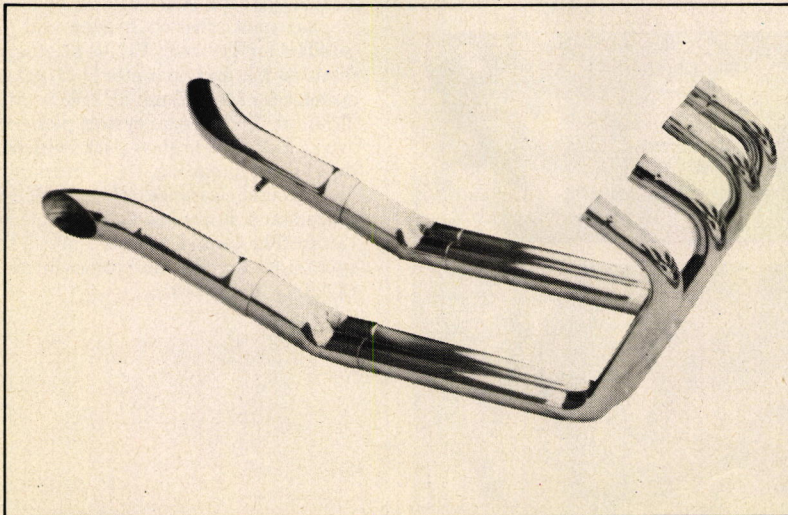
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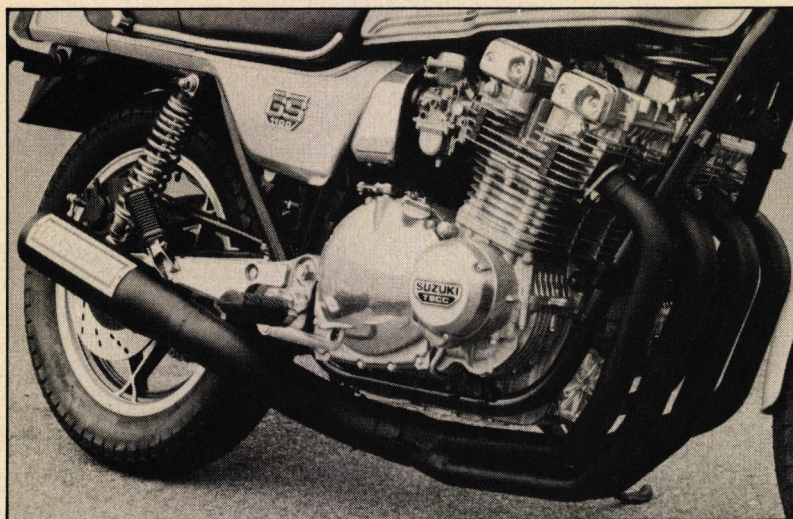
AMERICAN MOTORCYCLE ENGINEERING INC.

612 30th St.
Pasa Robles, California 93446
(805) 239-1040

Price: Check manufacturer's catalog
AMEN makes 2-into-1, 4-into-1, 4-into-2, Organ pipes, Drag pipes and Crossover TTs that fit AMEN hardtail and swingarm frames exclusively. Chopper styling a specialty, with frames and pipes available for Honda CB450/500/750, Kawasaki 900/1000 and Triumph 650. Features American-made steel, custom design, chrome plating, glass-pack mufflers and installation with supplied mounting brackets. Mini mufflers and Universal baffles offered; catalog and information available.

3

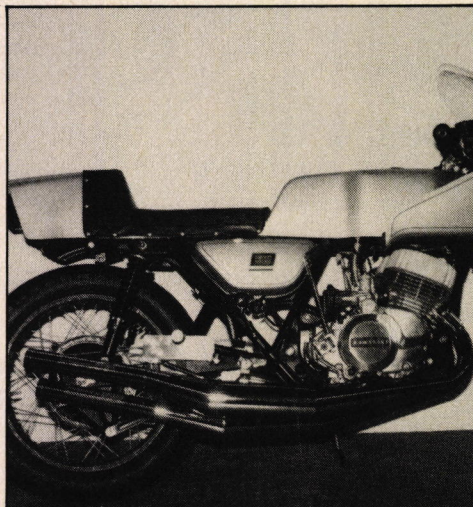
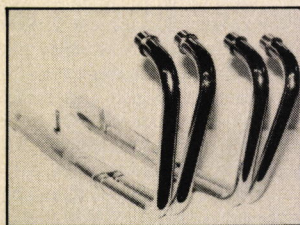


4**4****BASSANI
MANUFACTURING**

3726 E. Miraloma
Anaheim, California 92806
(714) 630-1821

Price: Catalog \$1.00

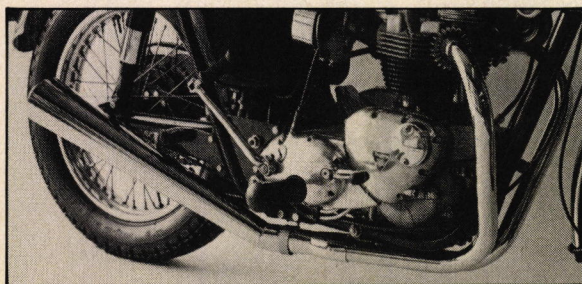
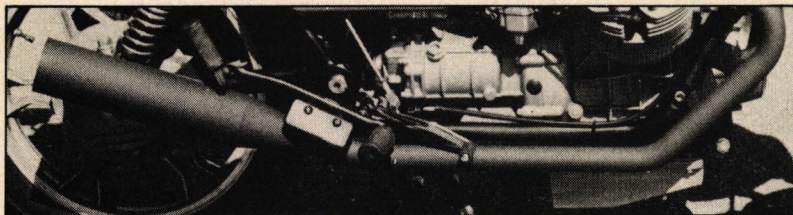
Selection of 4-into-1, 3-into-1, 2-into-1 street pipes; two- and four-stroke off-road single pipes; 4-into-2 stock muffler replacements; and two-stroke twin and triple expansion chambers. Suzuki GS1100 Superbike Pipe pictured. Features: competition-oriented exhaust with oil drain spigot supplied, maximum lean clearance, 25-pound weight saving, claimed performance boost, does not retain centerstand. Price: \$265 chrome, \$225 black. Superbike Stand optional at \$30, baffle options available for quieter operation. Street-legal systems offered in chrome or plasma-coated aluminum at \$200.

5**5****BILL WIRGES INC.**

Box 408 RR 2
Princeton, Illinois 61356
(815) 875-3354

Price: Catalog N/A

Kawasaki specialist with 2-into-1, 2-into-2, 4-into-1 and 4-into-2 street systems available for KZ models 400 through 1000. Two-stroke expansion chambers offered for Kawasaki singles and triples. The 4-into-2 system shown is made for KZ650s, 900s and 1000s, and features no-maintenance Tritube baffles, Free-flow headpipes, dual nickel chrome (\$189.95) or black (\$169.95), good ground clearance and easy installation. The two-stroke triple chambers for Kawasaki H1/2 and S2/3 have removable baffles, spring-mounted cylinder flanges and rubber-mounted brackets, and come in chrome (\$239.95) or black (\$184.95).

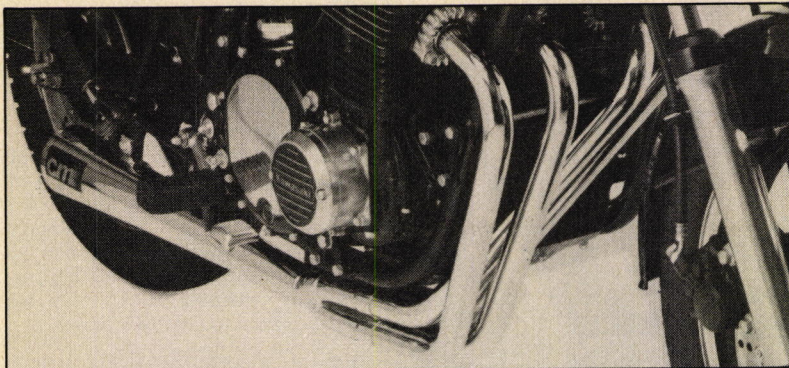
6**6****BUB ENTERPRISES**

785 East Brokaw Road
San Jose, California 95112
(408) 298-2826

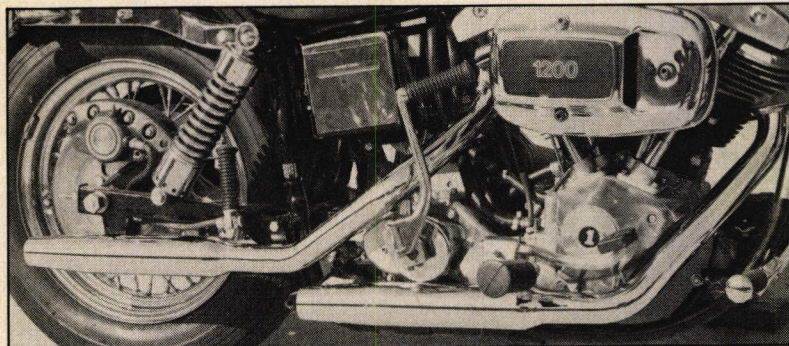
Price: Catalog N/A

Replacement exhausts, headers and mufflers for Triumph T120/140, staggered duals for FX and Sportster H-D, exhaust systems for Moto Guzzi SP and Le Mans. Triumph T120 header system pictured, 2-into-1, rebuildable glass-pack silencer, dual spring mounting, 1 1/2" headpipes, good ground clearance, retention of centerstand, in chrome (\$120) or black (\$105). The Guzzi Le Mans 2-into-2 bolts up to stock brackets and comes in chrome (\$225) or black (\$195).

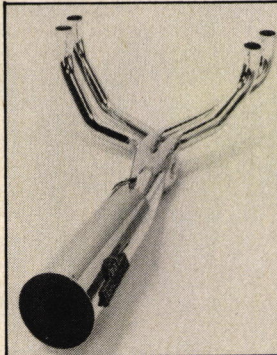
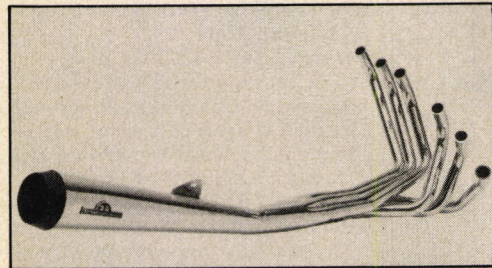
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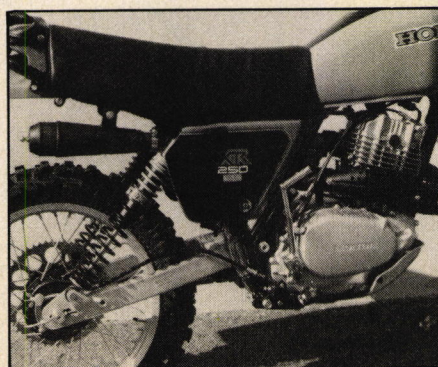
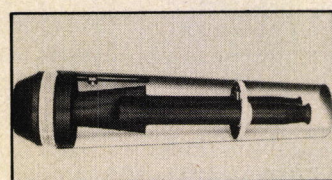
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9



10



7

CM PERFORMANCE PRODUCTS

570 Dunksferry Road
Bensalem, Pennsylvania 19020
(215) 638-0323
Price: \$197.50 chrome, \$167.50 black.

Suzuki and Kawasaki 4-into-1 systems only; GS models 750, 850 and 1000; KZ models 750 (four-cylinder), Z1 (900), Z1-R and MkII 1000. Features: equal-length headers, 360-degree firing order, retention of centerstand, easy access to oil drain, and an efficient collector and cone setup.

8

CYCLE SHACK INC.

1100 San Mateo Ave.
South San Francisco, California 94080
(415) 583-7014

Price: Catalog \$3.00
Harley-Davidson specialist. Slip-on factory replacement mufflers, plus shotgun, heatshield, tapered-turnout and shorty mufflers. Straight-through drag pipes available for racing Harleys, and street-legal SS muffler pipes are offered for all H-D models. Tapered mufflers for models FX, FXE and FXS (Low Rider) pictured. Features over-the-tranny rear pipe, and inside-the-frame front, with increased ground clearance for 1971-80 models with either kick or electric start.

9

DG PERFORMANCE SPECIALTIES INC.

1170 Van Horne
Anaheim, California 92806
(714) 630-5471
Price: Catalog \$3.00

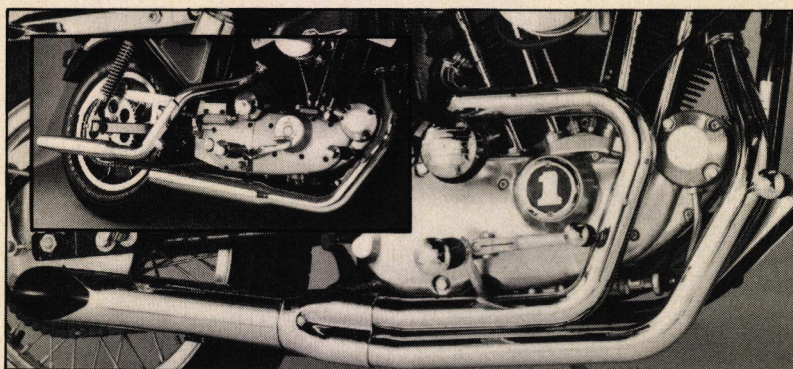
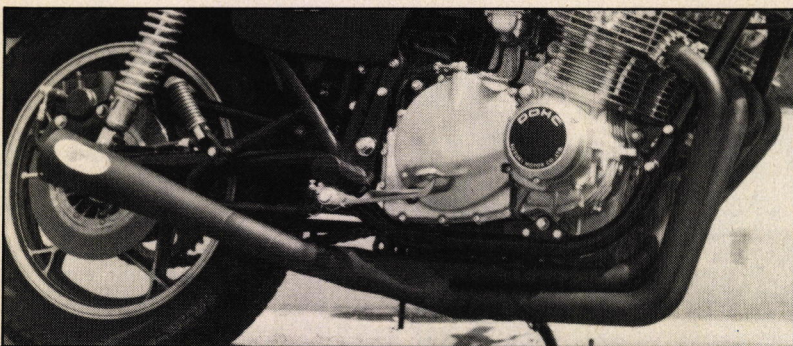
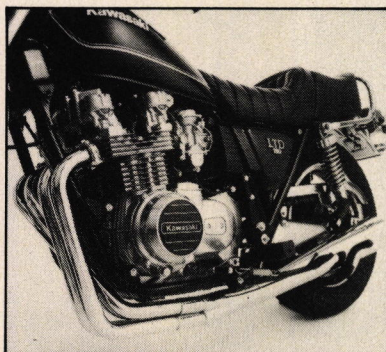
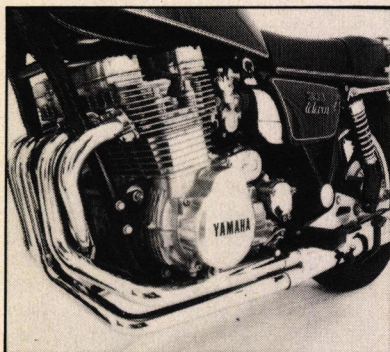
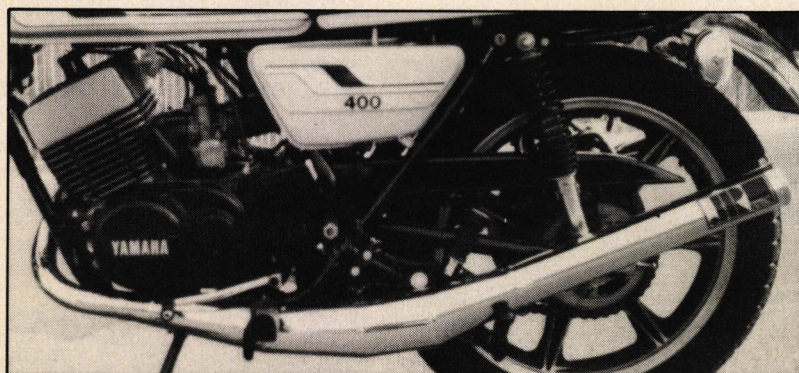
Street and dirt systems, replacement mufflers, and Honda Odyssey, ATC and Kawasaki Jet Ski exhausts. Street systems are made for most popular Japanese bikes in single, 2-into-1, 3-into-1, 4-into-1 and 6-into-1 configurations. Honda GL-1000 (\$194.50) 4-into-1, and Kawasaki KZ1300 (\$275) 6-into-1 are pictured. Both feature easy access to oil filter and drain, retention of side- and centerstand, ample clearance for touring accessories, aircraft-quality welds, guaranteed fit and easy installation.

10

DISCOJET CORPORATION

920 3rd St.
Davis, California 95616
(916) 756-5069
Price: \$49.95 street, from \$30 dirt

Discojet offers two models of the Supertrapp muffler conversion kit. The Street Supertrapp is a street-legal replacement for loud or restrictive baffles on performance exhaust systems with four-inch megaphones, including Alphabet, Jardine, Kerker, R.C. and others. It uses no packing, retains the basic exhaust note and claims no power loss. The Dirt Supertrapp is available in 25 inlet sizes to fit all two- or four-stroke off-road bikes, and comes in clamp-on or weld-on styles that both feature Forestry-approved spark arrestors.

11**12****13****14****11****DRAG SPECIALTIES**

5401 Smetana Dr.
Minnetonka, Minnesota 55343
(612) 935-1000

Price: Catalog \$6.00

Street-bike systems for Harley-Davidson and all Japanese twins and fours. 4-into-1, 4-into-2, 2-into-1 and singles, plus straight drag pipes. Firestacks for H-D Sportster pictured. Features: low-restriction muffler, slash-cut turn-out equal-length pipes, three-inch-diameter collector, chrome only, claimed to boost performance.

12**HOOKEE HEADERS**

Box 4090
Ontario, California 91761
(714) 983-5871

Price: Catalog N/A

Street systems from 6-into-1 to singles, some dirt systems (including three- and four-wheelers), and replacement mufflers. High, low and drag pipes for H-D, Norton, Triumph, BMW and most all Japanese models. Racing 4-into-1 system for Suzuki GS1000 pictured. Hooker makes no representations that its racing exhausts will conform to any or all applicable street regulations. Engineered for maximum horsepower, this racing system retails in black at \$148.50, or chrome at \$211.25, and comes with all mounting instructions and hardware.

13**JARDINE HEADERS**

7142 Belgrave Ave.
Garden Grove, California 92641
(714) 893-7594

Price: Catalog \$2.00

Some dirt systems, full line of street systems and replacement slip-on mufflers. Japanese street singles, twins, triples, fours and sixes, plus Harley-Davidson and Triumph. KZ750 LTD (\$199.95) 4-into-1, and XS Eleven (\$217.95) 4-into-2 shown. All street exhausts are tuned in length and diameter for each specific model, and help develop maximum performance with sound control. Left-exit pipes allow retention of centerstand.

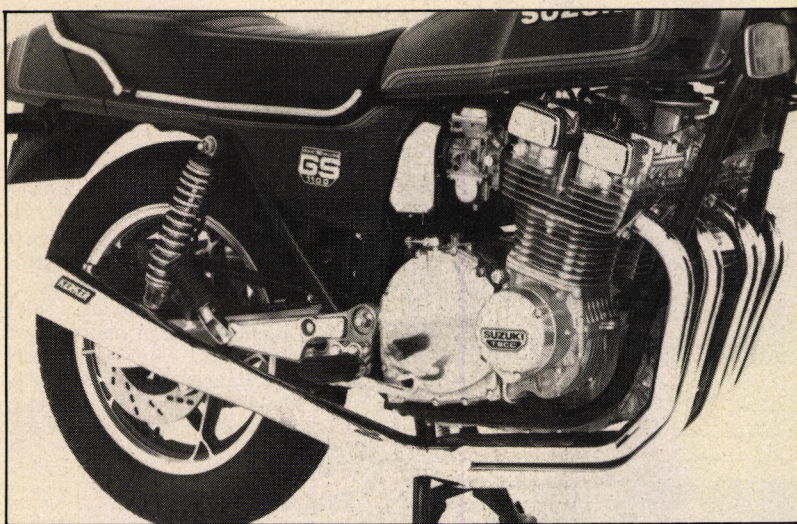
14**J & R EXHAUST SYSTEMS**

550 W. Mercury Lane
Brea, California 92621
(714) 990-5500

Price: Catalog \$2.00

Two-stroke twin and triple systems from \$144.95 to \$244.95, plus accessory headpipes (\$12-15) and expansion chambers (\$80-95). Four-stroke street systems, 2-into-1, 3-into-1, 4-into-1 and 4-into-2 from \$114.95 to \$220. Yamaha RD400 shown. All J&R systems feature oil filter and drain access, retention of side- and centerstand, increased lean clearance, claimed performance increase. Four-stroke systems come with two silencers, a competition glass-pack and a 50-state-legal Retro-flow.

15



15

KERKER

7900 Deering Ave.
Canoga Park, California 91303
(213) 999-3060

Price: Unavailable at
press time

Street exhausts for most all the Japanese superbikes and smaller multis. The all-new Suzuki GS1100 4-into-1 pictured, fits both the Standard and L models. Features: claimed smoother powerband and increase in horsepower, 50-state legal in stock trim, removable and repackable baffle, retention of centerstand, easy access to oil filter and drain, 21-pound weight reduction. In chrome or black. Also new for 1980 is a tuned exhaust for the Kawasaki Z-1 Classic fuel-injected bike, with claimed improvements in power and economy.

16

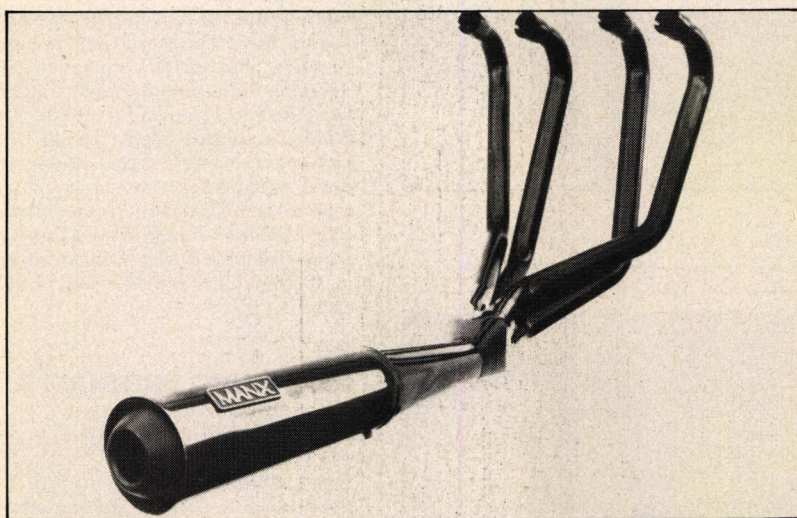
MCM MANUFACTURING CO.

601 S. East Street
Anaheim, California 92806
(714) 635-0850

Price: \$169.95

Exhaust systems, mufflers, extensions, baffles and adapters for some British, German and Italian and most all Japanese street bikes. 4-into-1, 4-into-2 and 2-into-1 specialists. Black Manx 4-into-1 system pictured, for selected models of Honda, Kawasaki and Suzuki. Features: black chrome finish for beauty and durability, an exclusive 4-2-1 collector for increased torque, weighs less than stock, oil filter and drain access, and retention of side- and centerstand.

16



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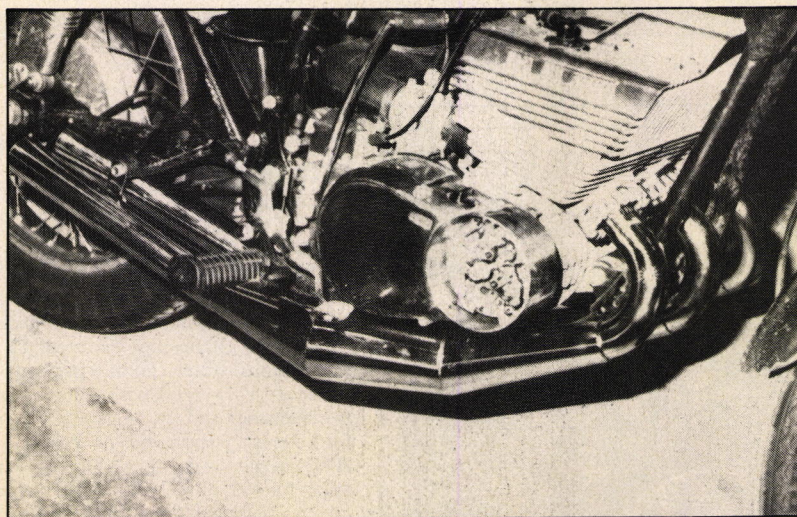
OCELOT PRODUCTS

895 W. Mill St.
San Bernardino, California 92410
(714) 884-0484

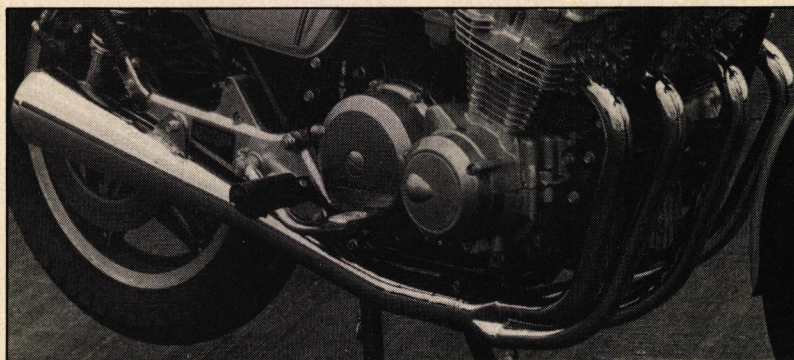
Price: Catalog \$2.00

Suzuki two-stroke specialist with a complete line of dirt chambers for TS/TC, TM/RM and PE models, plus 2-into-2 and 3-into-3 expansion chambers for all Suzuki T and GT street bikes. GT550 system shown. Features: comes as a complete set with exhaust flange, headpipe and all necessary hardware; all chambers have rebuildable silencers welded onto the chamber, centerstand must be removed, comes in chrome (\$299.95) or heat-resistant black (\$269.95). Twin street chambers in chrome (\$199.95) or black (\$179.95).

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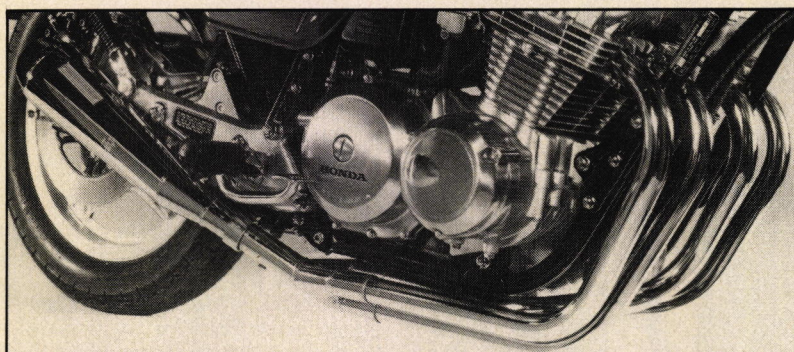
ONTARIO MOTO TECH CORP.

6850 Vineland Ave. Unit 16
North Hollywood, California 91605
(213) 766-7101

Price: \$185.95

Honda specialist, with 6-into-2, 4-into-1 and 2-into-1 systems available for Honda models CBX through Hawk. Some racing baffles and hand-bent pipes offered. CB750F 4-into-1 shown. Features: 17 pounds lighter than stock, easy bolt-on installation, clears side- and centerstand, access to oil filter, improves cornering clearance, claimed increase of nine horses. Also available in black for \$175.95; a CB750F hand-bent racing pipe is \$325.

19



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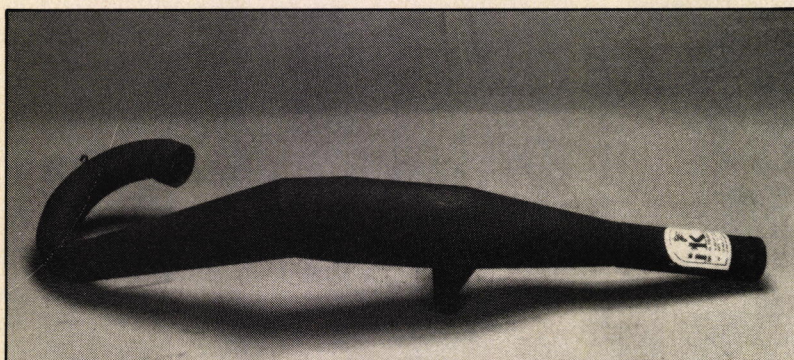
PAUL DUNSTALL ORGANISATION INC.

27402 Camino Capistrano, Suite 104
Laguna Niguel, California 92677
(714) 831-0351

Price: \$199.50

Manufacturer of tuned exhausts for most Honda, Kawasaki, Suzuki and Yamaha streeters, plus Norton Commando and Triumph Bonneville. 4-into-2, 4-into-1, 3-into-1, 2-into-1 into-2 (Tri), 2-into-2 and 2-into-1 systems available. Honda CB900F pictured. Features: 4-into-1, access to oil drain, retention of centerstand, lighter than stock, high-quality chrome-plated steel, claimed increase in horsepower. Dunstall slip-on Power Mufflers offered for most street bikes at \$115 a pair, or \$65 each.

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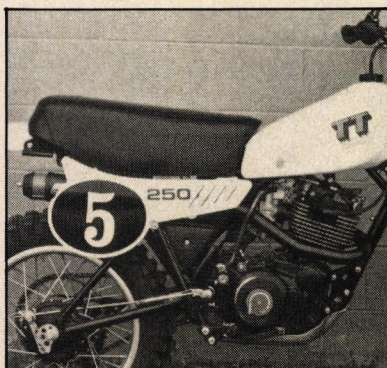
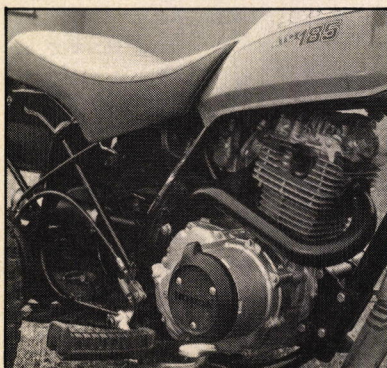
PK RACING PRODUCTS

245 South Paseo Sonrisa
Walnut, California 91789
(714) 595-1072

Price: \$38.95 to \$79.95

Selection of two-stroke and four-stroke pipes for most dirt Hondas, plus some pipes for other Japanese off-roaders. Honda three- and four-wheel specialist, with a complete line of ATC70/90/110/185, Tri-Moto and Odyssey exhaust systems. ATC185 pictured, bolt-on design with all necessary hardware supplied, claimed increase in power.

21

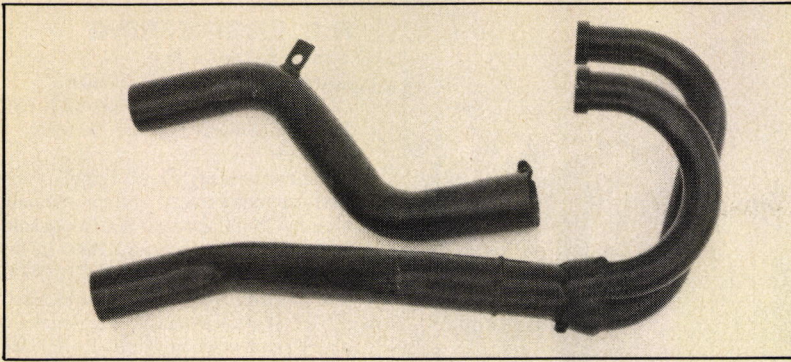


21

POWROLL PERFORMANCE PRODUCTS

Box 1206
Bend, Oregon 97701
(503) 382-6395
Price: Catalog \$2.00

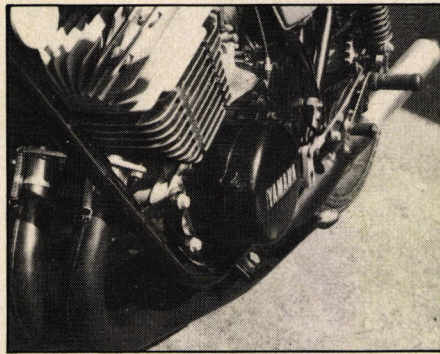
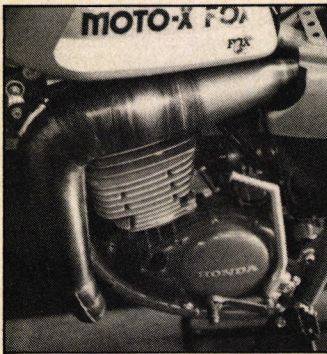
Upswept and downswept designs for dirt singles, plus Honda ATC three-wheelers. Yamaha TT250 up-pipe pictured, a 1 1/2-inch exhaust which claims a performance boost of 14% overall, with added power in the midrange and top end for \$39, plus \$35 for a Forestry-approved spark arrestor. ATC185 pictured claims a 16% power boost for \$39, plus the \$35 spark arrestor.

22**22****PRO-TEC INC.**

282 Gemini Way
Brea, California 92621
(714) 738-0631

Price: Catalog \$2.50

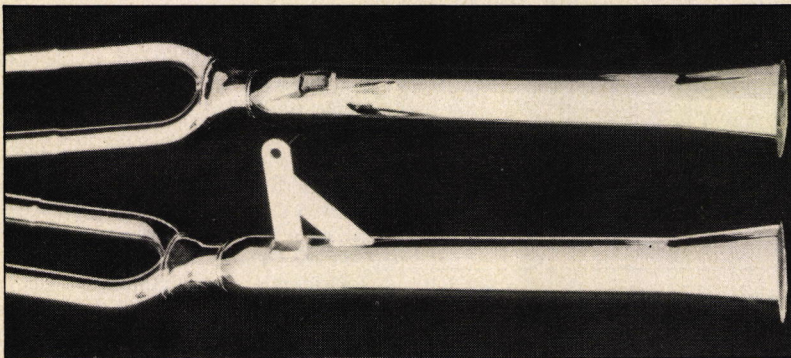
A complete selection of upswept and downswept performance pipes for most Japanese four-stroke dirt singles, plus Yamaha Tri-Moto, and a selection of racing megaphones, aluminum silencers and Super Trapps priced from \$15.95 to \$29.95. Honda XR/XL500 pipe pictured, \$89.95 without muffler. Features: claimed 25% increase in power, saves 10 pounds over stock, offered in either 1 5/8-inch O.D. for low-end torque, or 1 3/4-inch O.D. for high RPM.

23**23****PROTOPIPE EXHAUST SYSTEMS**

100 Cristich Lane
Campbell, California 95008
(408) 371-3336

Price: Catalog \$1.00

Good selection of motocross pipes for European brands, Can-Am, Honda and Kawasaki. Street chambers available for Yamaha RD350/400 and Kawasaki H1/2, plus custom-built expansion chamber parts kits for roadracers, flattrackers, street bikes and off-riders. Kits are \$40 to \$50 and require some welding. Honda CR250 pipe pictured, is \$120; RD350/400 chambers are \$140 with steel silencers, or \$185 with aluminum. Claimed increase in power and torque.

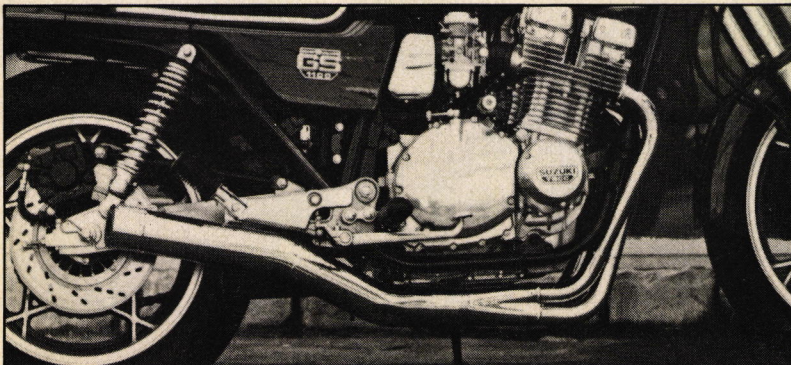
24**24****RAM-FLOW MUFFLERS**

1111 S. Fremont Ave.
Alhambra, California 91803
(213) 284-7150

Price: Unavailable at press time

Manufacturer of slip-on replacement mufflers for BMW, Harley-Davidson, Honda, Kawasaki and Moto Guzzi. Honda CB900 Custom mufflers pictured.

Features: 4-into-2, allows room for saddlebags and touring accessories, installation to stock headers, chromed, repackable, claimed increase in performance and mileage. Information available on other models.

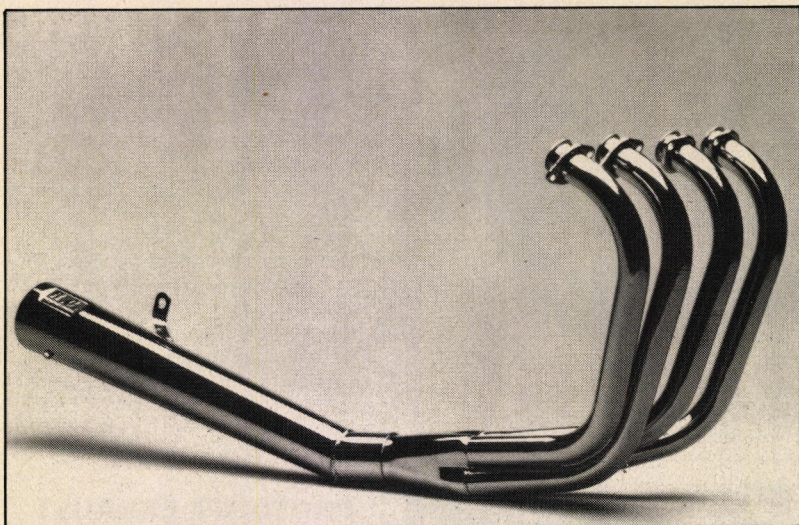
25**25****RB RACING**

9063 W. Washington Blvd.
Culver City, California 90230
(213) 559-0256

Price: \$199.50 chrome, \$179.50 black

Manufacturer of 4-into-1 high-performance exhaust systems for Honda CB750s (except automatics), Kawasaki KZ650/900/1000, Suzuki GS550/750/1000/1100, and Yamaha XS750/Eleven. Suzuki GS1100 pictured.

Features: maximum ground clearance, access to oil filter and drain, rebuildable baffles, leak-free precision collars, 16-gauge steel tubing, high-quality chrome or baked-on black finish. CBX 6-into-2 system available for \$275 chrome, or \$245 black.

26**26****R.C. ENGINEERING**

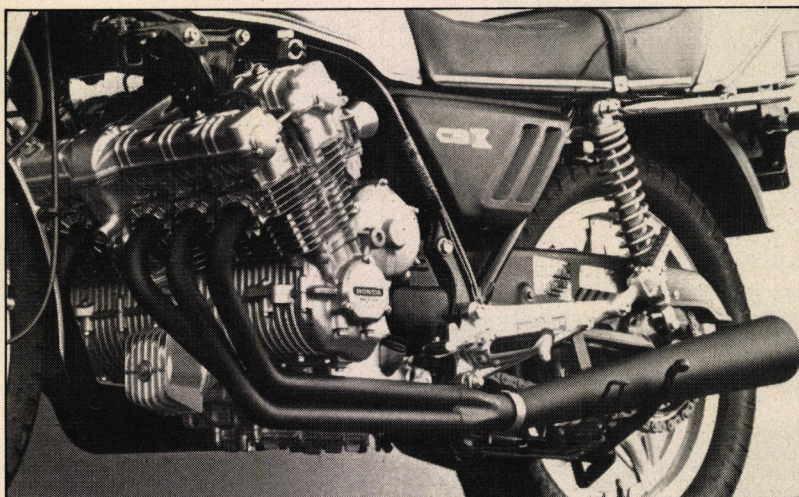
13300 Estrella Ave.

Gardena, California 90248

(213) 327-6858 or (800) 421-1878

Price: \$199.95 chrome, \$189.95 black

Manufacturer of "The Original" 4-into-1 performance exhaust system. Available for Honda CB500 through 900, Kawasaki 550 through 1000 (including KZ900 LTD and KZ750 four), Suzuki GS550/750/1000/1100 and Yamaha XS750/Eleven and Maxim. 3-into-1 systems available for Yamaha triples at the same price as 4-into-1. GS1100 exhaust shown, with claimed increase in power, good ground clearance, access to oil filter and drain, retention of side- and centerstand, weighs about half as much as stock, 50-state legal with installed baffle. Racing-only baffles available separately. R.C. slip-on replacement megaphones for most popular streeters are \$73.50 chrome, or \$63.50 black.

27**27****R.P.O.**

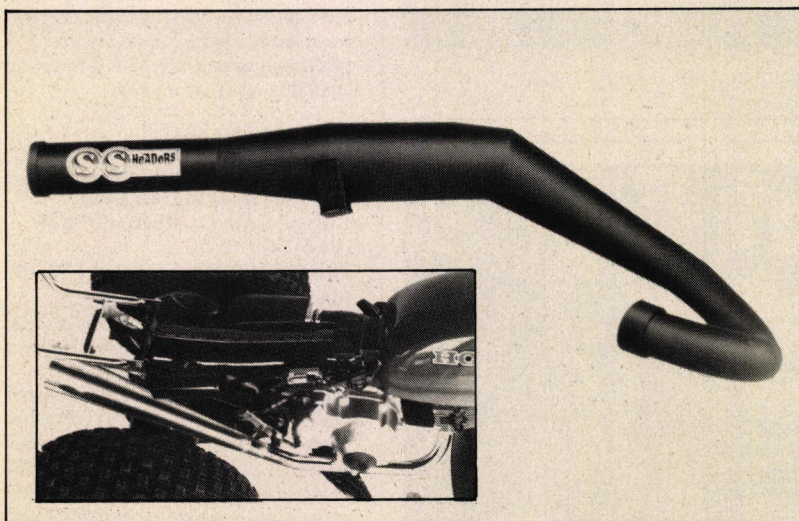
4432 Enterprise St. Unit L

Fremont, California 94538

(415) 656-8275

Price: Check manufacturer's catalog

Racing Purposes Only specializes in 4-into-1 systems for Honda CB750/900 DOHC, Kawasaki KZ900/1000, and 6-into-2 systems for Honda CBX, plus tapered headpipes for two-stroke Kawasaki H1 500s and H2 750s. These are pure performance parts designed solely for racetrack application. Honda CBX system shown, features "full pyramid" collector, maximum lean clearance, access to oil filter and drain, retention of side- and centerstand, and a low-restriction glass-packed muffler. Information available.

28**28****S & S HEADERS**

3565 Cadillac Ave.

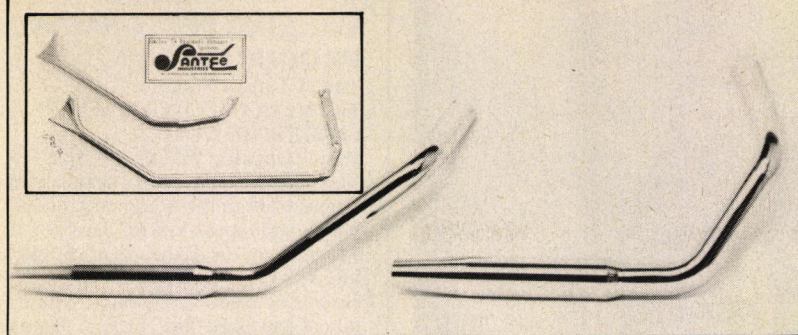
Costa Mesa, California 92626

(714) 546-8635

Price: Catalog \$2.00

Manufacturer of 2-into-1 street systems for BMW, Harley-Davidson, Norton and most Japanese twins; plus 3-into-1, 4-into-1, 4-into-2 and 6-into-1 systems for most Japanese bikes. Good dirt selection for three- and four-wheelers, Honda ATC110 and Odyssey pipes pictured. ATC110 is \$43.60 with black finish, \$68 in chrome; Odyssey comes in black only at \$105.95. Both systems claim increase in performance and come with all the necessary bolt-on hardware.

29



29

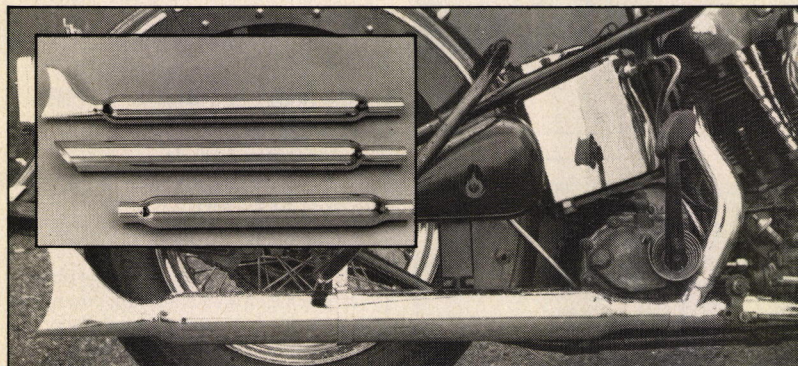
SANTEE INDUSTRIES

651 Arroyo Ave.
San Fernando, California 91340
(213) 365-3236

Price: Catalog \$3.00

Harley-Davidson specialist offering street and drag 2-inch O.D. pipes, fishtail mufflers, tapered mufflers and shotgun duals. Sportster tapered exhaust shown, has steel baffle, heliarc welds, good ground clearance, fits rigid and swingarm models. Fishtail exhaust shown fits Knucklehead, Panhead and Shovelhead. Some pipes available also for Honda and Kawasaki fours: 4-into-1, 4-into-2 and 4-into-4 drag.

30



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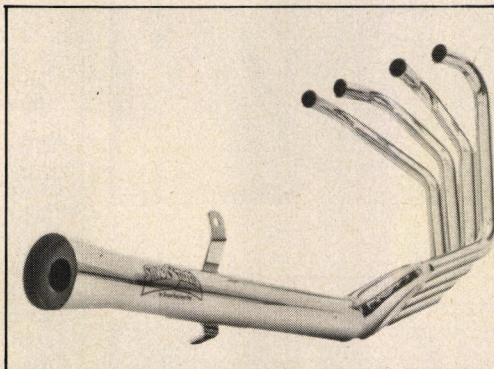
THE PIPE SHOPPE

732 W. 14th St.
Long Beach, California 90813
(213) 432-1646

Price: Catalog N/A

Exhaust systems for Harley-Davidson only, with a full line for classic and late models constructed of heavy-gauge American-made steel finished with brilliant chrome plate. Photos: 3-inch O.D. fishtail (mounted) comes in either 32-inch or 36-inch lengths, does not include headpipes, mounts easily to stock bracket on swingarm frames or to tab on rigid frames, all-steel core, \$120 a pair; rockets (27-inches overall, \$85 a pair), angle cuts (34 1/2-inches overall, \$100 a pair), and fishtail.

31



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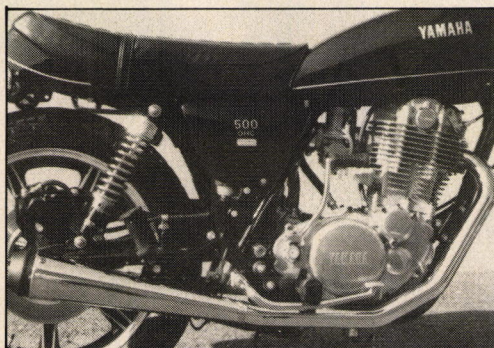
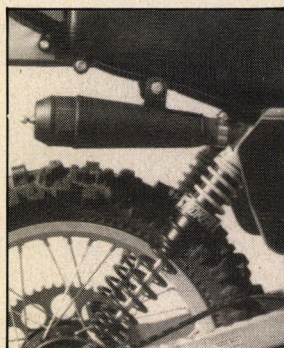
TORQUE PRODUCTS

895 W. Mill St.
San Bernardino, California 92410
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32



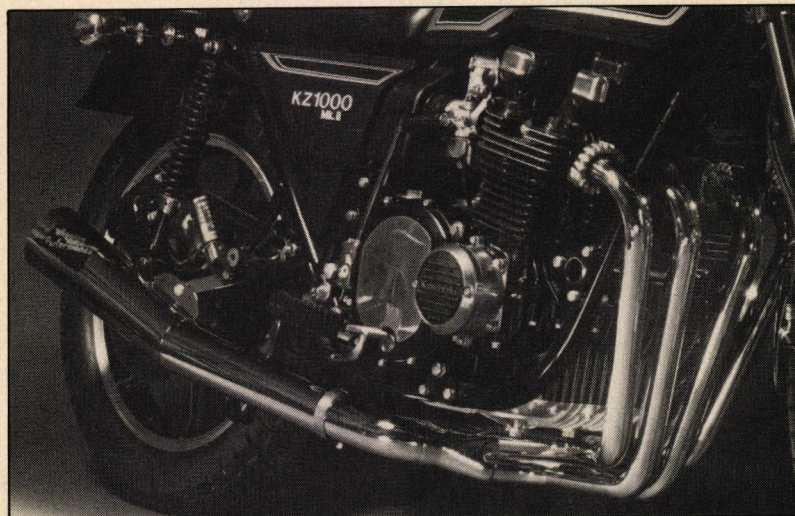
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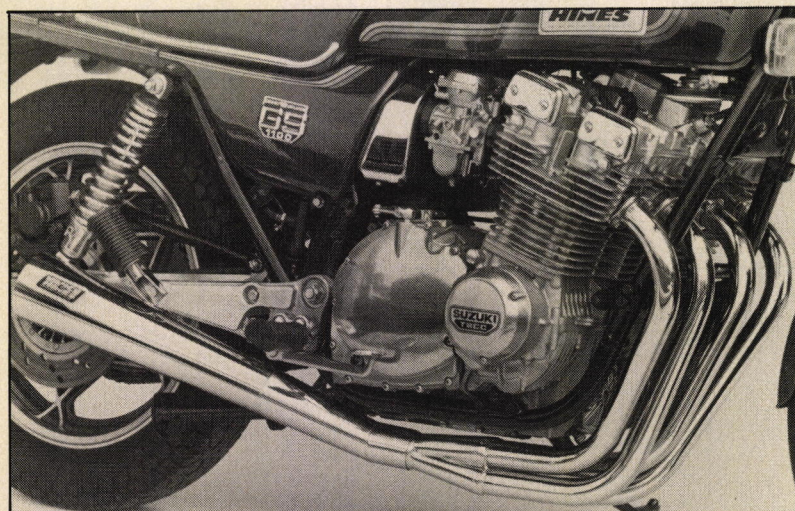
Manufacturers of exhaust systems, replacement mufflers and megaphones, baffles and repack kits for most popular Japanese multis. Exhausts are 6-into-1, 4-into-1, 3-into-1 and 2-into-1 in black, chrome or special-order black-chrome (about \$40 more than chrome). Kawasaki KZ1000 MkII pictured. Features: access to oil filter and drain, retention of side- and centerstand, claimed improvements in power and economy, complete installation instructions, \$199.50 in chrome or \$178.50 in black.

34**VANCE & HINES (VHR) RACING**

14010 Marquardt
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(213) 921-7461

Price: \$199.95 chrome, \$189.50 black

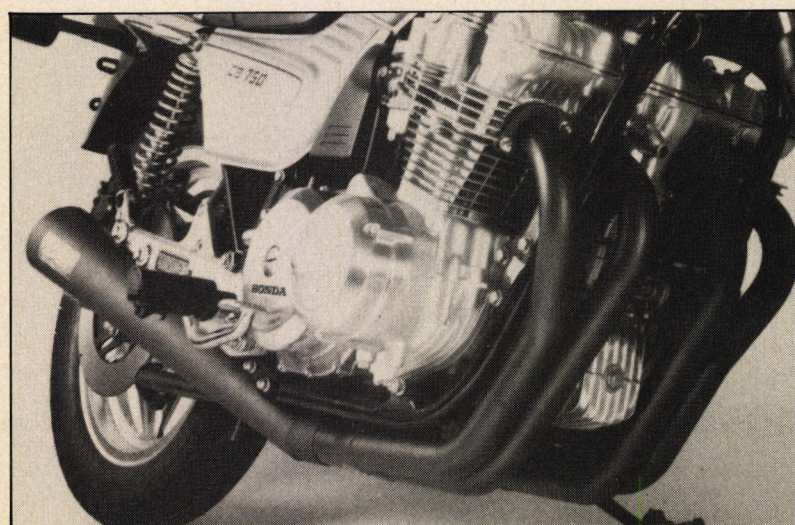
VHR is a new company in the pipe aftermarket formed by the potent ProStock dragracing duo of Terry Vance and Byron Hines. 4-into-1 systems are available for the Kawasaki KZ650/1000, and Suzuki GS550/1000/1100. Suzuki GS1100 system pictured. Features: twin-flow collector, street-legal Power-Flo baffle, retains centerstand, access to oil filter and drain, maximum cornering clearance, claimed increase in horsepower in the midrange and top-end, designed for optimum passing power in fifth gear. Information available.

34**35****YOSHIMURA R&D OF AMERICA INC.**

5517 Cleon Ave.
North Hollywood, California 91601
(213) 985-2331

Price: \$185.00 chrome, \$160.00 black

Manufacturer of 4-into-1 and 4-into-2 street systems for most popular Japanese multis, plus racing pipes and baffles for Superbikes. Honda CB750F shown, features lightweight design, maximum ground clearance, claimed to meet Federal noise levels. Suzuki four-valve, and some DOHC models have systems available for \$240 chrome and \$210 black. Catalog available, price N/A.

35

SPORT LINES

Cycle Guide's True Tales of Race Courses, Dark Horses and Machines at Speed

EDITED BY DAIN GINGERELLI



PHOTOGRAPHY: DAVID DEWHURST, RON HUSSEY AND PATRICK BEHAR

Flag-Waving At Carlsbad

Marty Moates nationalizes the 500cc USGP.

• Just before the starting gate falls at the Carlsbad, California 500cc motocross Grand Prix each June, electricity crackles against your skin, as if a summer thunderstorm hung in the air. Your nervous system tells you that this race really means something, no matter how laid-back the bleached-blond boys with their portable Igloo coolers and the half-clad girls drenched in coconut-scented suntan oil might seem. Sure, there are two other GPs held in the

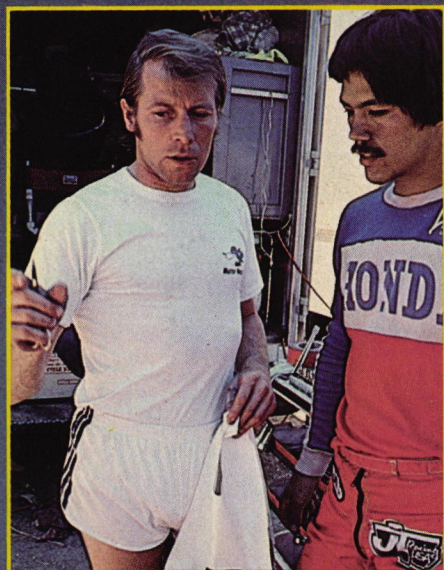
U.S.A., and any stadiumcross crowd outstrips Carlsbad's 20,000 spectators, yet no other motocross in this country *feels* so important.

Part of the reason lies in the pomp and circumstance of the Bel-Ray and Suzuki banners. Part of the reason lies in the massed presence of the Los Angeles-based motorcycle community. Part of the reason also lies in the presence of ABC's Wide World of Sports, which has been at Carlsbad since 1971, when it recognized the

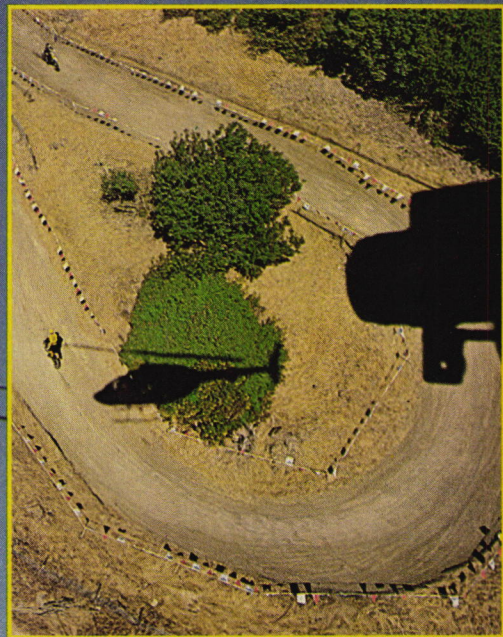
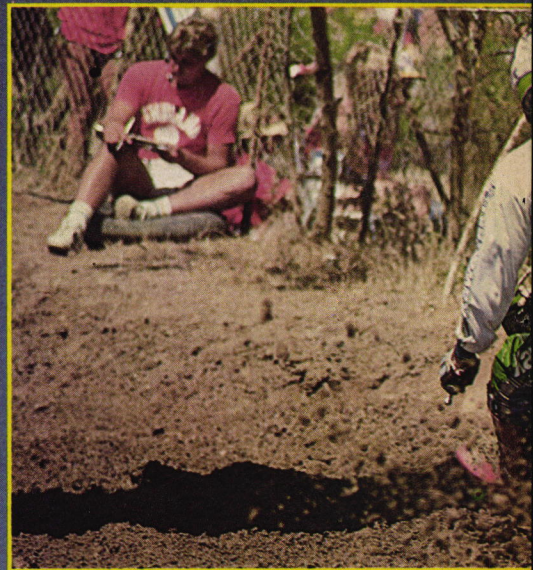
groundswell of enthusiasm for dirt bikes caused by the movie "On Any Sunday" and hired Bruce Brown to direct its coverage.

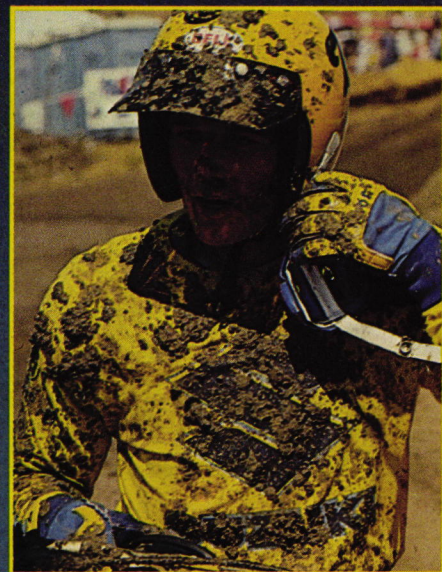
All of these things combine to make Carlsbad the essence of motocross. It's been a long time in the cooker, though. Carlsbad began when two moto-journalists from Britain, Gavin Trippe and Bruce Cox, capitalized upon the sanction war to control American motocross between Edison Dye and the AMA. Because

Continued



The U.S. motocross community witnessed more than the usual carnival of colors at Carlsbad. It was the first time several American riders were in contention. Brad Lackey, coached and spurred on by corner workers and flag-waving spectators, was favored. But nobody could prevent Marty Moates from making history. And overshadowed by the rampant nationalism was the departure of Roger DeCoster, who crashed in perhaps his last U.S. appearance.





Continued





Trippe-Cox had successfully promoted an AMA flattrack race at Ascot in 1968—the very first Yamaha Gold Cup—it wangled a race date for the Trans-AMA in 1970. Suzuki agreed to sponsor the race, and because no deal could be cut with a track in the L.A. area, a tract of land near San Diego became the site of the race. Since then, the cost of promoting the event has risen from \$11,000 to \$275,000, but at the same time, the mystical combination of sex, summer and speed has worked upon Carlsbad until even trackside cynics regard it as a race where reputations can be won or lost.

Anticipation for this year's race ran high, for an American finally seemed poised to snag both ends of the double-moto race and repel the nasty foreign invaders—the premise for the event in 1970 as well as 1980. Jim Pomeroy and Brad Lackey had each won motos in the past, of course, and Mike Bell had led quite a few laps, but to American crowds, it's the overall win that counts. And this year, Lackey had proven himself the fastest, if not the most consistent, rider in the class since Yamaha retired Heikki Mikkola, to which Kawasaki responded, distributing thousands of small American flags to wave Bad Brad on to victory. Meanwhile, Bell and Danny LaPorte had good credentials at Carlsbad, and even Chuck Sun looked like an outside chance because of his European experience. Also, Carlsbad's fast, hard-packed adobe spooks the Europeans, who are accustomed to much more difficult circuits.



Yet in the end, none of these Yanks made history. Bell didn't even gate because of problems with his entry, while LaPorte came off the starting line out of the first five, followed at a distance of several places by Lackey and Sun. Instead, many spectators were still thumbing through their programs in search of some clue to No. 23's identity when Marty Moates came by with a four-second lead at the end of the first lap on his LOP-sponsored Yamaha.

At first Moates looked like just another Yankee nickel-rocket, though, as last year's 250cc GP champion, Yamaha International's Hakan Carlqvist, reeled him in. On the tenth lap Moates felt the pressure and fell, after yielding the lead to the Swede followed by LaPorte. As he admitted later with a hasty stammer, "Well, I was mentally prepared to lead, yes—but not by that much."

But after Moates fell, something happened to him. Finally he felt he *deserved* the lead, and able to play the hound instead of the fox, he went to work on Carlqvist and LaPorte. First, Carlqvist wilted in the heat and LaPorte passed him. Then Moates and LaPorte duelled briefly. LaPorte had a grossly overweight, single-shock Suzuki that threatened to swap ends like a TM400 Cyclone on downhills. Moates rode a Yamaha YZ465 modified and tuned by the *wunderkind* of privateer teams, Laurens Offner, for whom Team LOP is named. Moates' softly suspended bike swallowed the bumps better than the factory Yamahas, giving it sta-

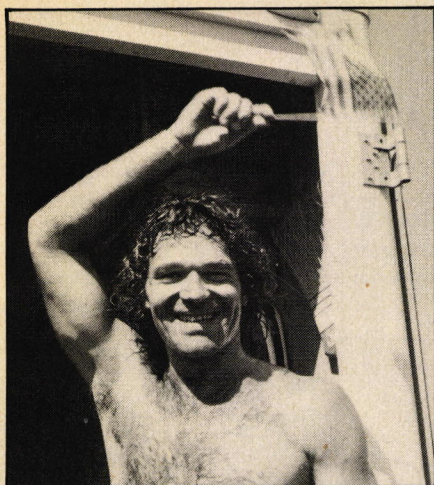
bility on Carlsbad's pock-marked straights and letting the tractable 493cc motor get all its power on the ground through a Metzler tire. Moates prevailed and LaPorte dropped to third with dirt in his bikes' shifter.

Between motos, the railbirds gradually remembered Moates' credentials. After racing success in the San Diego area, especially at Carlsbad, he went to Europe in 1977 backed by Ossa. An injured shoulder brought him home. When the factories seemed to forget him, he signed with LOP for 1978. Working with Offner to develop a winning bike, he injured his knee in mid-season. Then he hurt himself again in March, cracking an ankle in a stadium race.

Moates might never have ended this cycle of injury and disappointment, except that he happened to catch the 1980 Winter Olympics on television. The example of Phil Mahre, who skied to a medal after a succession of severe ankle injuries, inspired Moates to begin an exercise program for his injured leg before the cast even had been removed. Yet at the end of the first moto, injuries looked to have caught up with him again, for he had kicked a footpeg with his ankle and could only hobble to his van after he climbed from the saddle.

Nevertheless, Moates took the lead at the beginning of the second moto. He later explained, "Everybody likes to start with their rear tire on the concrete pad next to the gate. But your rear wheel spins too much there. Start on the dirt and your wheel still spins, but you





can get the holeshot if you're on the ball. That's one thing I know from racing here before."

This time, though, Lackey didn't gate in 10th place and he began a 10-lap charge, overtaking Moates on the downhill on Lap 12. But as Moates later explained, "I saw the times going down from my pit signs and I knew Lackey was catching me. I knew he must have had better lines than me. But if I gassed it, I'd get tired. So I let him pass me, saw where his lines were and then passed him back." Actually, Lackey bobbled and rode over a berm, expecting only to lose some time, but he tangled with some spectator fencing instead, trapping his bike for two laps.

Moates crossed the finish line to the cheers of the crowd after staving off a charge by Suzuki's Gerard Rond. As he did, the story of Carlsbad came full circle. For you see, Carlsbad's prestige grew out of the confluence of American-International rivalry, the success of "On Any Sunday" and the interest of ABC television. And it was in 1971—the year of ABC's first Carlsbad coverage—that Marty Moates, who was later to become the first Yank to earn the overall Carlsbad win, convinced his mother to take him to Carlsbad to see the international motocross stars. A week later, 14-year old Moates conned his mother into taking him to see "On Any Sunday." And the next day, Marty Moates and his mother walked into a local motorcycle shop and purchased his first bike, a Bultaco 125.

—Michael Jordan



Continued

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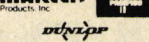
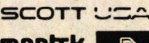
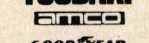
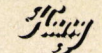
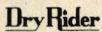
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The Wide World of Carlsbad

Looking at the USGP from behind the TV camera.

• "Ready tape? Roll tape," said the Director, Andy Sidaris.

"Tape rolling," said the Technical Director, Jim Vrieling.

"Speed?" said Andy. "Speed," said Jim.

"OK, mark it. One minute, *one minute*. Remember fellas, go for the wrecks, stay with the wrecks. Lackey's on the Number One bike in green, follow the leader."

Camera One zoomed in on the start line, the riders blipped their throttles and dug in for traction when the gate dropped.

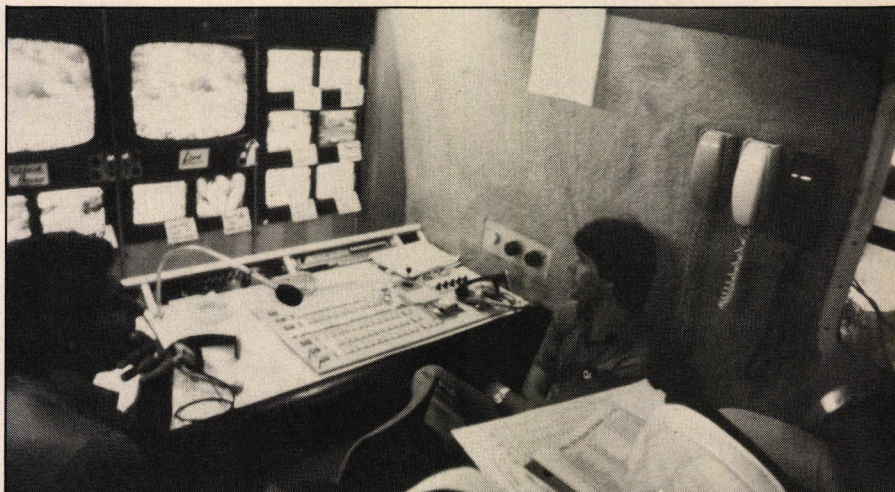
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Thus, at 1:13 P.M. on June 22, the tenth ABC *Wide World of Sports* telecast of the USGP at Carlsbad began. Not a live show, though it must be produced as if it were; not even a delayed show for same-day prime time consumption. Nope, Carlsbad '80 will be edited over the summer at ABC headquarters in New York and put in the can for broadcast during the first quarter of the new year, just like each of its nine predecessors. It is trendy in some moto-circles to upbraid WWS for this long delay in airing the event. By next January, it is argued, the 1980 season will be moot and the story of the USGP will be as stale as a Carlsbad hot dog.

"Not altogether so," says Bruce Cox, the co-

promoter and founder of the USGP. "The point is the telecast is fresh to non-enthusiasts, by far the most important segment of *Wide World's* audience. And basically, I'd rather have 30 million see it in winter than 10 million in summer." The bottom line, as they say in

TV, is that the first quarter historically generates the highest ratings for anthology shows like WWS (which is far and away the leader of the genre), and the business of television is conducted in terms of those ratings. "The trick is to find an 'anchor element' that you can build a

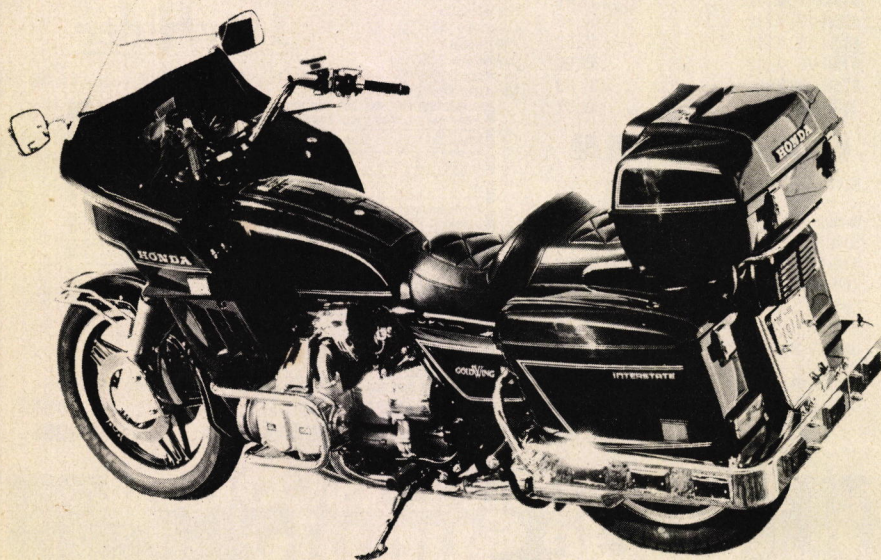


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show around," explains Bob Iger, Manager of Program Planning for WWS. "Carlsbad developed quickly as a secondary element and soon became a solid anchor," he adds. "The 1976 show—even considering heavy tune-in for the Innsbruck Olympics—drew an 18.5 rating, and a 41 share, which is excellent."

Ratings are figures which estimate the number of sets in operation and that, in the hands of network execs, determines how much to charge sponsors for air time. In 1976, Carlsbad recorded an 18.5 rating, which means that of all the usable sets in America, 18.5 percent were tuned to Carlsbad '76. The same show's 41 share indicated that of all the sets actually in use at that time, 41 percent were receiving the race. Both numbers are hefty enough to keep the network, and advertisers, happy.

If some moto-fans aren't happy, it's unfortunate, but they have about as much chance of changing Carlsbad's air date as they do choosing Charlie's new Angel. With upwards of \$50,000 per commercial minute at stake—and there can be more than 20 of them in a 90-minute show—events that don't draw good numbers are dropped, and ones that do, like Carlsbad, become anchors in the time slots that work best.

• • •

"Hold everything, fellas, I think we have a race," said Andy.

With Marty Moates stroking a big lead, the first third of Moto One has not produced exciting pictures in the ABC mobile unit, and the Director has struggled to provide the human drama of athletic competition with the 22 different looks his eight fixed cameras can give each lap. But then Carlqvist stalked and eventually overtook Moates, and suddenly there were two bikes in every screen of the 17 monitors in the mobile unit.

"Beautiful pictures," said Andy, snapping out camera changes to capture the action. He's a pro, and he doesn't miss much. "Can you believe this?" he said, as Carlqvist and Moates diced, "beautiful stuff." Moates went down. "Great picture!"

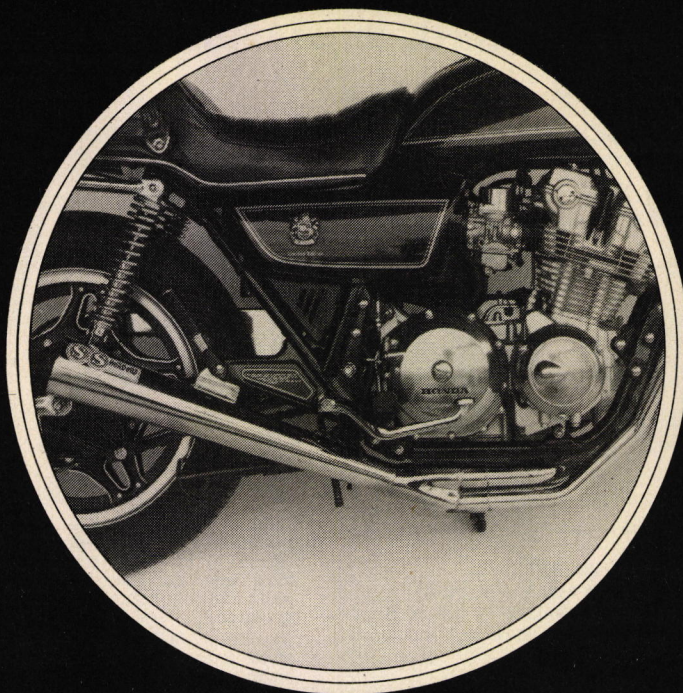
Carlqvist took a big lead. "Fall, do something if you want to be on this show," said Andy.

• • •

The network pays the Carlsbad promoter a "rights fee," which is not made public, for the privilege of broadcasting the race. In addition to that, ABC's commitment of men and material to Carlsbad is considerable. The crew, 75 strong, live like the MX factory stars on the TV sports circuit. Add 10 Hitachi cameras at \$100,000 per, three VTRs at \$200,000 each, five miles of cable, two dozen microphones, the \$750,000 mobile unit, the helicopter rental and construction of eight fixed-camera towers, and ABC is into Carlsbad with maybe \$3 million worth of salaries and technology.

Not to mention visibility, for watching WWS is an event unto itself on Carlsbad Sunday. Crowds gather all day outside the ABC compound, people gawking at the castle of the wonderworkers. At all points of the track, the bikini set are scarcely unaware when the cameras pan close for the "honey" shots. Jim Lampley, the archetypical young sports announcer pounding

Continued



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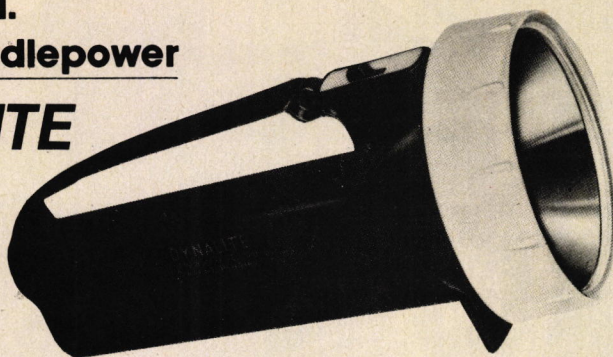
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SPORT LINES *Continued*

the Carlsbad beat for the fifth time, does not go unnoticed as he prowls the pits taping rider interviews.

"Of all the things I do, I most enjoy events like this," says Lampley. "World class, but enough out of the ordinary to require some ingenuity in explaining it to an uninitiated audience." Does he mind "layover," the scripting of an audio track after the tape is edited and sometimes five months after the race? An emphatic "Yes! It's absolutely the toughest job I have. I'd really love to call the race live," he says wistfully, "even though it might not air for six months. Maybe next year..."

Will there be a next year, considering the vagaries of television? People at ABC are non-committal. "We have an option," says Bob Iger, "but we haven't exercised it yet. It is, however, something that if we dropped it, somebody else would pick it up." Pause for effect. "I don't foresee us dropping it," he concludes.

Bruce Cox, always the promoter, allows, "Of course, Carlsbad would exist *without* ABC, but in a different form. Sponsorship money would be less, and we'd attract fewer contingency sponsors, too. The purse would be reduced, because the AMA reserves a percentage of the rights fee for riders, and that would be gone." He trails off, avoiding consequences too dire to consider—losing ABC's cameras.

Due in a large part to ABC's telecast, Carlsbad is the richest single Grand Prix motocross event in the world. Bar none. The start, purse and contingency moneys, plus the broadcast rights percentage, total over \$50,000. Marty Moates stands to collect about 10 percent of that total, by far the biggest payday of his peripatetic career.

"You see, it's a good thing all around," says Cox, mental computer ablaze. "The network, knock wood, is happy with the numbers, motorcycling benefits—even the street biker who could care less—the promoter makes money and the sponsors get recognized." He adds sums well, indeed.

...

In the last few laps of the first moto, Moates and Danny LaPorte are threatening Carlqvist's lead.

"Who's Number 16?" says Andy.

"LaPorte, the American champ," says a cramped bystander.

The Director swivels, stubs out a cigarette and barks into his mike: "Hey, fellas, all cameras, stay with your shots but let the leader go. Pick up 16 in third place—he's one of us."

LaPorte explodes onto the monitors right on cue, but bobbles and loses any hope of the lead. Moates passes Carlqvist, however, and the thrill of victory in Moto One belongs to an American after all.

The lights come up in the mobile unit, and the Director pushes his chair back. "That's it guys," he announces into the mike. "Good job. Hold your positions, all cameras, we've got one hour, *one hour*, then we do it all again. Stay tight and follow the leader—but hold on the wrecks.

"Remember, fellas," he says, signing off for the moment, "Life is a 'take.' There ain't no rehearsal."
—Jeff Burt

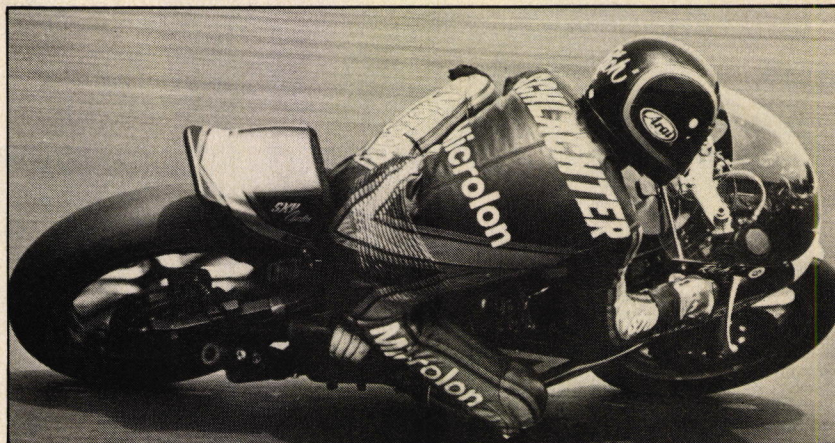
Pit Bits

- Rich Schlachter picked up his first AMA Grand National win at the Loudon Motorcycle Classic. Schlachter's only threat came from Freddie Spencer's F1 Honda, but his ride ended with a suspected oil leak. As it developed, the **Honda** got **sideways** in a corner due to oil from Ron Pierce's disabled Honda, and the costly inspection pit stop put him out of contention for the win, so the bike was parked. Said Schlachter after the race, "My bike was really slippery out there. I'm sure glad Roberts wasn't here."
- Meanwhile, Roberts was on the other side of The Pond trying to make it four in a row. Mechanical problems have finally crept into his pits, though, and he has not won a race since the Spanish GP. Even though not the center of attention on the victory podium, KR still holds a commanding lead in the points race and has jokingly asked that Randy Mamola **slow down** his RG500 so he can take it easy. The King has less complimentary words about the legendary but unsuccessful Honda NR500:

"The NR500 is fast from corner to corner—it's just not fast through the corners."
 • There are those who feel that the **NR500** has validity, if not **potential**, though. Such

as Michelin, which is experimenting with 16-inch tires—the same size that Honda and Dunlop scrapped after initial tests (and races) proved unworkable for road racing.

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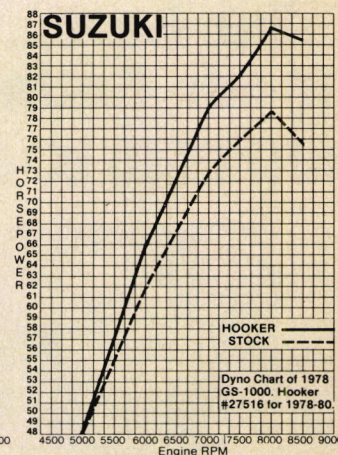
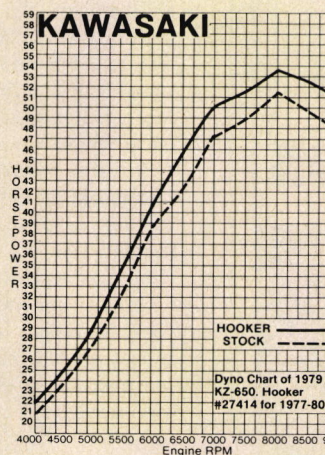
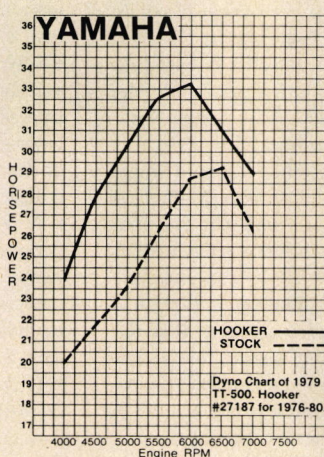
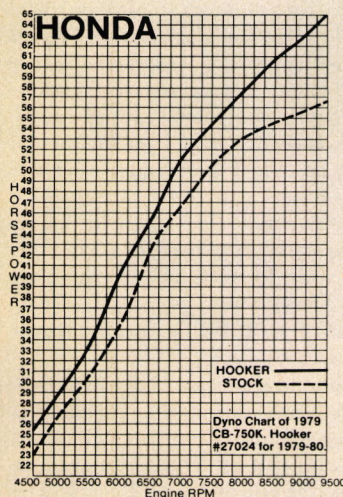
HENRY BOLTON

Schlachter winning at Loudon

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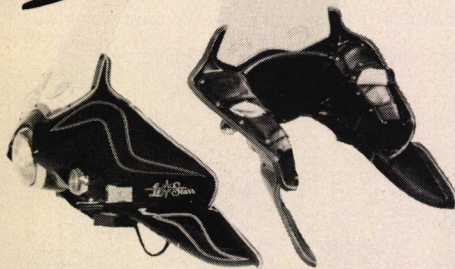


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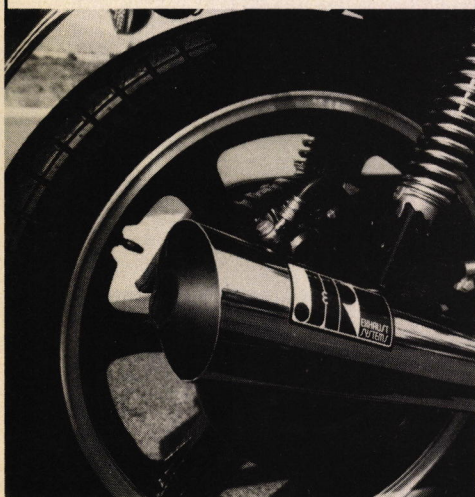
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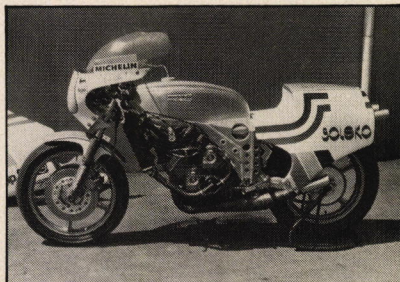
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SPORT LINES *Continued*

According to Michelin sources, a 16-inch tire affords more tire patch for braking, which is why several of the RG500 factory bikes have them on the front. There's been a "no comment" from Dunlop at this time, probably because the company is happy with its latest batch of tires—the same series used by Randy Mamola for his Belgian GP win. Incidentally, **Mamola's win** was his first world championship 15-pointer and Dunlop's return to the front of the 500cc-class pack after four years.

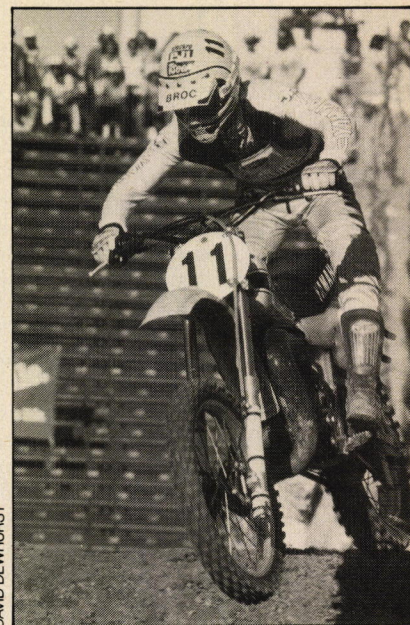


DOUG JACKSON

Morbidelli's 500cc square-four

Monoshock in a monocoque frame.

- A look to the back of the 500cc-pack reveals some interesting technology and brand names on the rise. One is **Morbidelli**, which has a **square four** similar to Suzuki's RG500. The Morbidelli's chassis and integrated aluminum gas tank (creating a monocoque design) is similar to Kawasaki's new **KR500**, which Kork Ballington has begun to ride with fair success. Evidently, the Kawasaki engine is based on grafting two KR250 in-line twins together. The KR500's rear suspension is based on the production-line Uni Trak, while the Morbidelli has a single-shock system similar to Yamaha's monoshock.
- Suzuki is following the lead to a single rear shock, too. At the present, Mamola is the only rider satisfied with the Kayaba-shocked bike, which he rode to victory at Zolder in Belgium.
- On the home front, **Jay Springsteen** is back. No sooner had it appeared that the three-time AMA champ was out for the season than he got the okay from doctors to race, resulting in a fourth at the Ascot TT. According to his doctors, Springsteen is suspected to be borderline diabetic.
- Flattrack enthusiasts seeking a little history into the sport can join the **White Plate Flat Trackers Association**, P.O. Box 297, Sturgis, South Dakota 57785. The association is headed by former flattrack racer J.C. "Pappy" Hoel, and has been set up to preserve the history of flattrackers. Pappy is currently working on a Hall of Fame type of book on all the greats of American roundy-round racing.
- While the names Bennie Campanelle, Chet Dykgraaf and Frenchy Castony might not mean much to young motocross racers today, **Kent Howerton** and **Broc**



DAVID DEWHURST

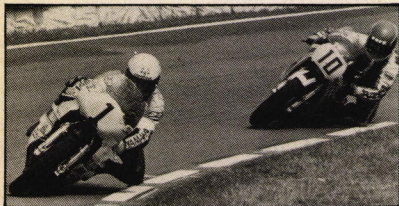
Broc Glover at the Superbowl double

When second place just won't do.

- **Glover**, should ring a bell. Howerton, having wrapped up his first AMA 250cc championship, had to play second fiddle two days in a row to Glover at the Superbowl of Motocross. Even though Glover won wire-to-wire on Saturday night, spectators thought it would be a different story Sunday, since promoter Mike Goodwin ran a reverse sweep on the riders by running the two races in opposite directions. It didn't confuse Glover in the least, and his yellow YZ250 went as quickly clockwise on Sunday as it did counter-clockwise the night before. In a separate non-points, two-lap run-off between Howerton and Glover, the two-day bridesmaid caught the bouquet—and with it a cool grand.
- As a side note to the Superbowl, and supercross tracks in general, here are a few names given to turns and jumps on the course: The Goodwin Tornado, Honda Himalayas, **Hell's Bell's Super Berm**, and Schlitz Screamer.
- If those names sound corny, try these: Doran's Bend, Drinkwaters, Handleys, Governor's Bridge, Bray Hill and the all-time-great **Creg-ny-Baa**. Those are landmarks on the **Isle of Man TT** course. This year's TT recorded six fatalities and a new lap record set by Ulsterman Joey Dunlop on a TZ750 in the Classic event. Dunlop traveled the 37-mile Mountain Course at an average speed over 115 mph.
- While talking top speed, our eye-in-the-sky satellite spotted several bikes last June at the French GP zooming down the long straight at Paul Ricard. The radar gun of *Motor Cycle Weekly* registered these figures: Ricardo Tormo's tea pot tiddler Kreidler 50 shaking the pavement at 108 mph, while Guy Bertin's Motobecane 125

clocked more than one mile per hour per cc, doing a cool 126 mph. Franco Uncini led the thunderbikes with his RG500, setting a trap speed of 151—tops for the day. **Sidecar** devotees will be interested in Alain Michel's Yamaha-powered rig pushing air at **137 mph**—monkey and all.

• Graham Noyce hasn't been breaking the sound barrier with his Open Class Honda, but he did manage to **break his leg** at the Italian GP. The champ, who seems to be plagued with bad luck ever since he earned the Number One plate, said he'll sit out the remainder of the season so he can properly heal for 1981.



MIKE MEYER

Top Yanks Over There

A Fast Freddie in their future?

• Mamola and Roberts might have more Yankee company for a world championship roadrace title next year. Don't be surprised to see Freddie Spencer on the GP circuit, too. Spencer said Honda will be back with a 500 ride. Evidently, Honda rider Takazumi Katayama placed second with an improved version of the NR500 at a recent international race, so there appears to be hope of a four or five marque struggle next year. Spencer said he wants to take the same basic approach Roberts used to capture the 1978 title—race in the 250 and 500 class, using the quarter-liter division as a training ground to learn the course. So look for a water-cooled two-stroke 250 from Honda also. Roberts, who claims Mamola already is one of the top riders on the circuit at the present, had this to say about Spencer, "He's smooth, fast, and tough. He'll be tough to beat in the future." The future could be 1981.

• The last pit bite goes to the Shredder. It seems Peter Gregg, Florida sports car racer and millionaire, wanted to buy Kenny Roberts' 1978 Daytona-winning 750, for display in his private museum. The offer was passed to Yamaha's R&D department, owners of the bike. According to race director Ken Clark, the offer was turned down because, "All team bikes are viewed as R&D instruments—and all R&D projects are doomed to be destroyed. Period." So the **Shredder's jaws await**—if they haven't already claimed—a piece of history. To illustrate further the Shredder's appetite, Clark said **Roberts** himself wanted to retain his 1978 world championship bike for a coffee table trophy. Again, a "no." The only comment from the Shredder was a metallic clank and a contented burp. •

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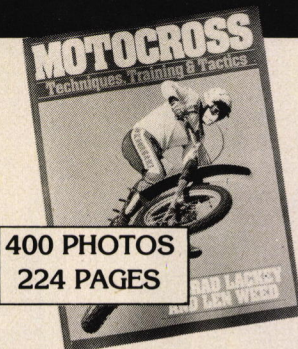
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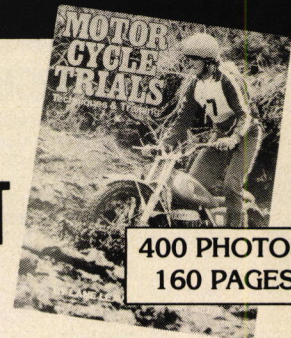
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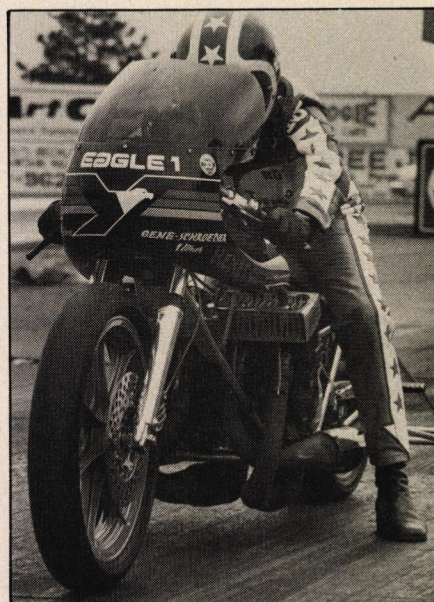
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SPORT LINES *Continued*

DRAGRACING:

Perforated TZ750

Why is there air?



PHOTOGRAPHY: TERRY WHYAL

• The sport of the motorized slingshot, known familiarly as dragracing, has attracted growing numbers of devotees in the past few years, but dragracing requires money, always in short supply. As a result, many weekend warriors who have neither the time nor money to chase Pro Stock or Top Fuel records have turned to the DD/G class, designed for 750cc bikes running on gas. Long dominated by two-stroke bikes like Kawasaki triples, DD/G offers the quarter-mile enthusiast blazing speed with little mechanical trickery.

But Ron Knapp decided to take a different approach. To the best of his knowledge he owns the only air-cooled Yamaha TZ750 road racing engine in existence. And with the tuning help of Gene Schroeder, the general manager of Fairway Yamaha, Knapp has ridden the Yamaha-powered bike to an IDBA record of 9.41 seconds at 142 mph.

Schroeder converted two water-cooled TZ350 cylinders into a single air-cooled TZ750 because "The engine is lighter and simpler, yet still runs cool enough to need considerable warm-up time." Knapp and Schroeder also keep on hand a set of 700cc and 500cc barrels as well as a canister of alcohol to multiply the number of classes they can compete in.

Although his road racing engine wasn't designed for the stresses of the quarter-mile, Knapp is pleased with the reliability of his 150-hp powerplant, "We have had over 100 runs with no major problems or teardowns. The key is that we never have had to really exploit the motor, so it's basically stock. The untapped po-

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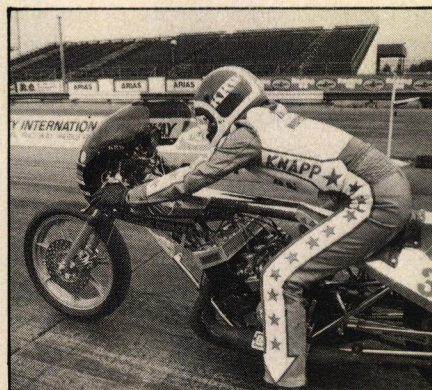
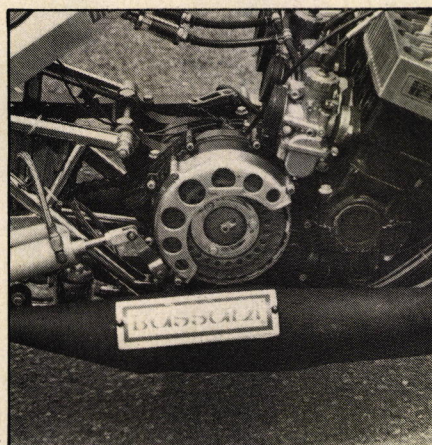
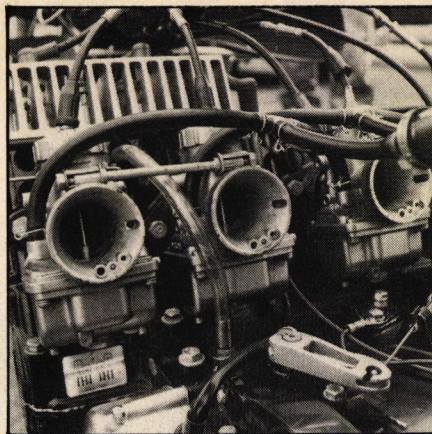
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tential is staggering, but so far we are still trying to get all the power we have on the ground."

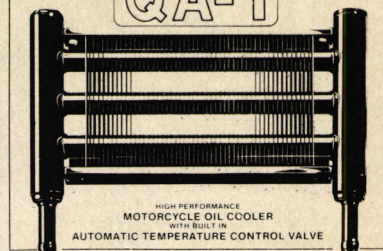
The weak link appears to be the clutch, for the plates must be replaced every five passes. But Schroeder hints of a new slipper-type clutch he's developing that should deliver more power to the rear tire. And against that day, Knapp wants more tire: "We have a new Good-year six-inch wrinkle-wall coming. That should double our rear tire-tread surface. And we need it. The tire we have is still spinning as we go through the lights."

An air-cooled road racing engine might seem like a strange thing to bring to the dragstrip, but Knapp and Schroeder have proven that the TZ750 has more potential than Yamaha ever dreamed of. The proof of it could come when Schroeder fits the bike with an air-shifter and Knapp begins pursuit of the team's next goal—an eight-second quarter-mile. —Terry Whytal

Continued



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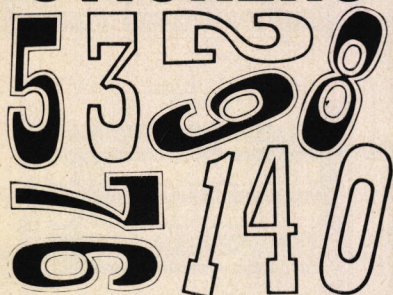
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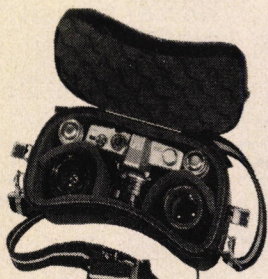
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SPORT LINES *Continued*

ROADRACING:

Dutch Treat

A winner buys his own ticket.



PHOTOGRAPHY: RON ZUEHLKE

Middleburg on the road to victory aboard his modified TZ500

It's a Yamaha once you get past the Bakker-frame and Moeller-engine.

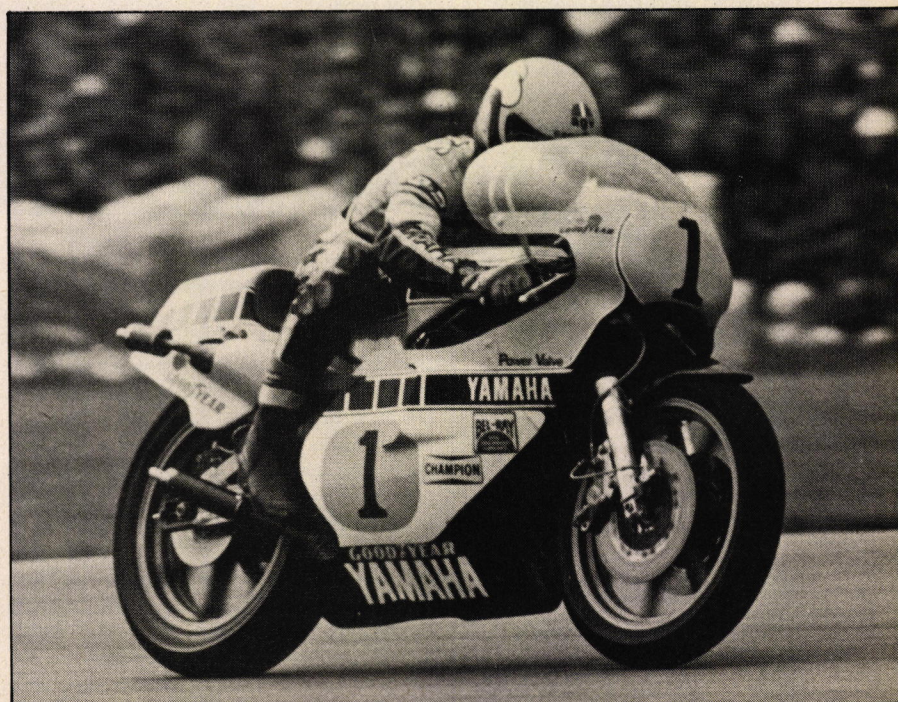
• Whiners and winners constitute the list of Yamaha 500 roadracers. And the only winner on a Yamaha 500 has been Kenny Roberts, which makes for a long list of whiners. Those that race KR repli-racers claim their reasons for losing are simple: Their motorcycles don't have the horsepower to win.

And judging by their performances, they're right. Even two-time world champ Barry Sheene hasn't placed his TZ500 in front of the yellow-and-black YZR500. But then, Sheene

had a difficult time placing his factory Suzuki RG500 in front of Roberts, anyway.

Jack Middleburg finally shut up the whiners, though. The 28-year-old Dutchman put his TZ500 into the elite class of 500 GP winners when he stormed to first in the Dutch TT.

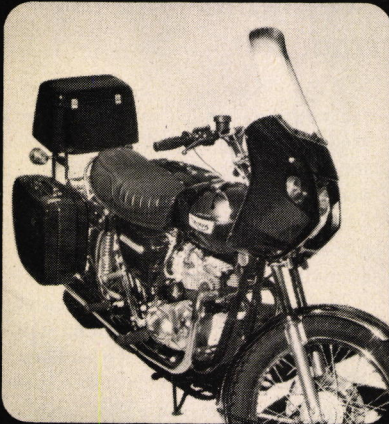
According to sources in Europe, though, Middleburg's bike isn't just an ordinary over-the-counter TZ500. The frame, built by Nico Bakker, is more rigid than the stocker's, which many riders claim is too flexible for 100-hp.



Yamaha's power-play—Kenny Roberts and YZR500

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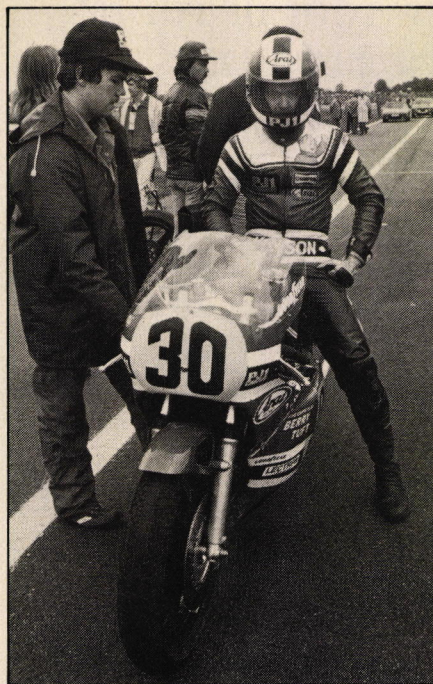
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Former Daytona winner Dale Singleton
On just another Yamaha TZ500.

Perhaps even more significant, though, is the facelift to Middleburg's engine, since, after all, the TZ500-whiners have complained about power, or actually the lack of it. One source claims the engine modifications were performed by Jorg Moeller, who labors under the assumption that the customer bikes are, in fact, detuned to Roberts' favor. Moeller claims the exhaust and transfer port timing for the customer bikes provides good power, but not over a broad rpm band. A pipey engine, as any racer will agree, makes a bike more difficult to ride, since power comes on and off abruptly, as though monitored by a toggle switch.

Evidently, Moeller corrects the port timing by shaving off one millimeter from the bottoms of the cylinders, then compensates for the lower height by machining metal from the combustion chamber. The resulting effect is an engine that produces about as much power as before (which Yamaha factory people steadfastly insist to be on par with Kenny's last year's bike), but on a more agreeable curve.

Middleburg won the Dutch TT with more than the right engine and frame combination, though. Water-soaked skies played an influential role, too, in winning the 50th Dutch TT. While most of the field elected to run with rain or intermediate-weather tires, Jumping Jack, as his countrymen nicknamed him, rolled to his grid pole position on slicks. The gamble paid off when the drizzle subsided and the track dried during the 16-lap race. Also, Roberts—Middleburg's number-one threat—dropped out early with a flat front tire.

Middleburg's victory at the Dutch TT was the first-ever by a Yamaha privateer in the 500 GP class. More important, it proved that a showroom model can win the big races. In the process, Jumping Jack relabeled the whiners as bona fide losers.

—Dain Gingerelli

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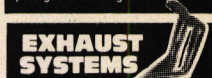
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Winners & Losers

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• Emotion, as much as horsepower and heads-up riding, played a part in Ronnie Jones' Santa Fe TT win last June. Three weeks prior to the TT, Ronnie's brother, David, was killed when he crashed into a spectator who crossed the track at the Louisville Downs half-mile national.

The Santa Fe TT was Ronnie's first race since his brother's accident, and it would have been obvious to expect a less than stellar performance from him. Instead, he won his qualifying heat, sliding his Yamaha 500 single like a rider programmed to do nothing but win. He seemed more mechanical than human in the early part of the Santa Fe race program.

But Jones seemed to change for the main event. During the rider interview on the starting grid, he was open with his intentions that evening. His mother had traveled up from Oklahoma to watch, and he said he was going to ride fast for her. There was no mention of David.

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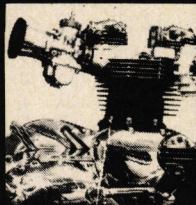
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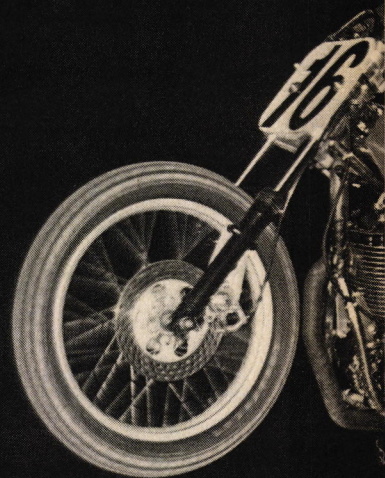
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PHOTOGRAPHY: TOM RILES





When the fire-up signal was given for the start, Jones snapped closed his faceshield, and shut out the rest of the world for the next 20 minutes. He became a machine again. A fast machine.

He led into the first turn and took the win unchallenged. It was, by conventional standards, a dull race. But the crowd felt the emotion packed into his ride, and gave No. 16 a standing ovation.

He was met and embraced after the race by his mother. "I only wish that David was here to see me," said an elated Jones from the victory podium. "I won for him."

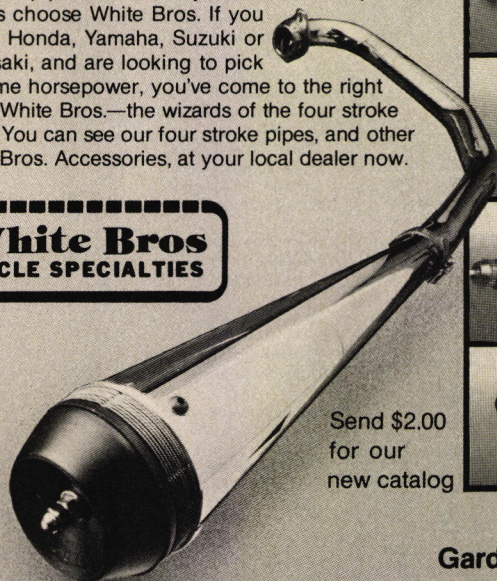
—Tom Riles



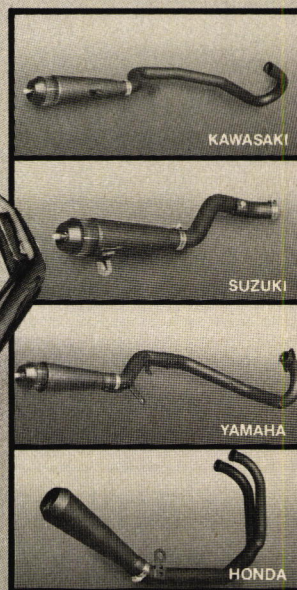
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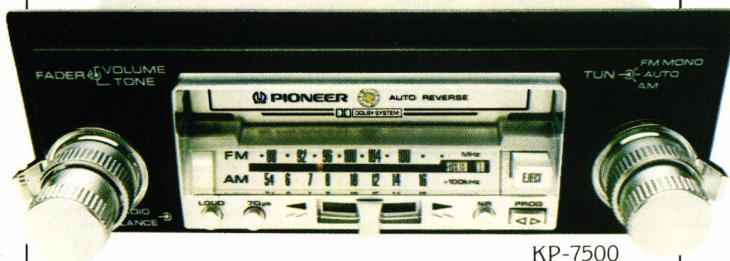
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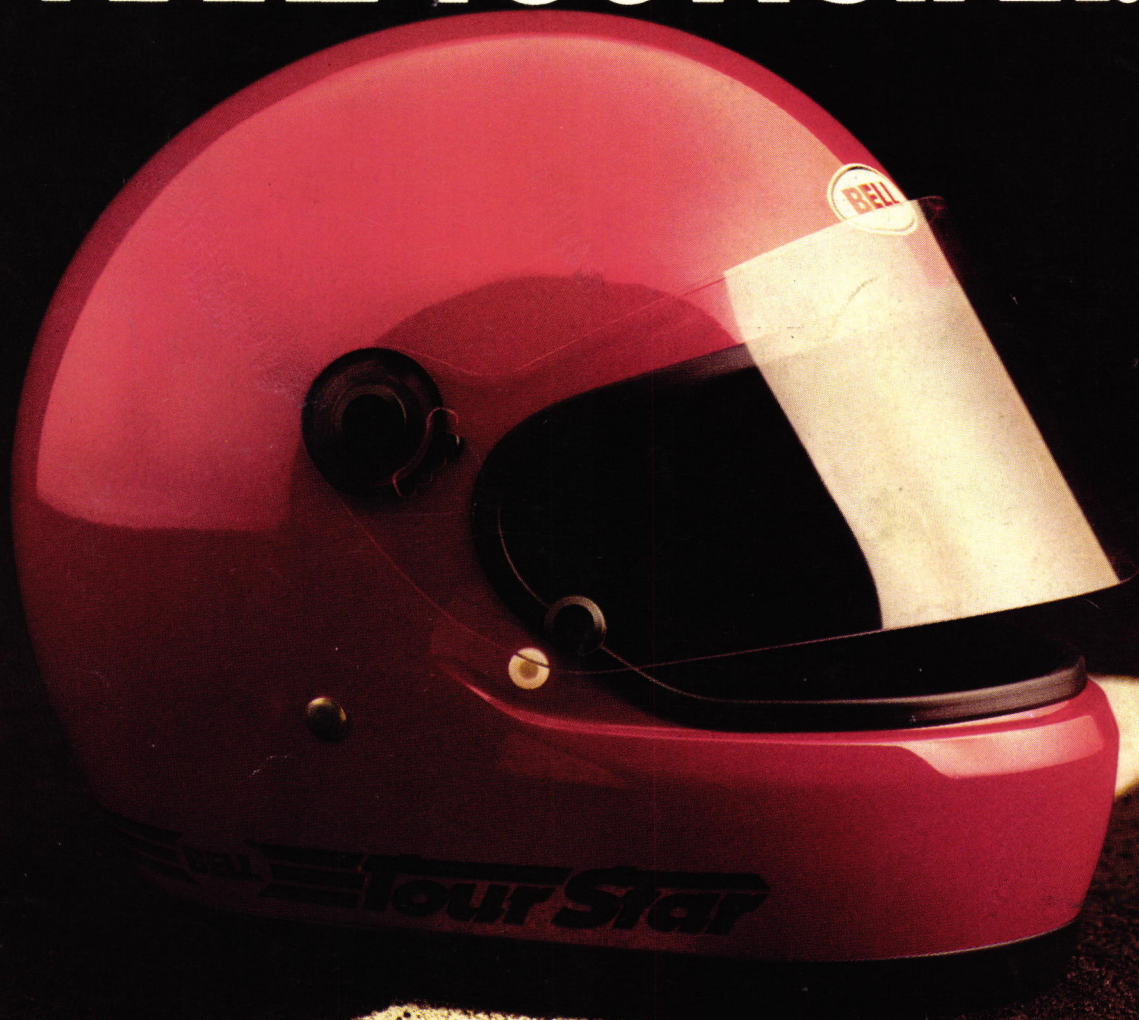
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